

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

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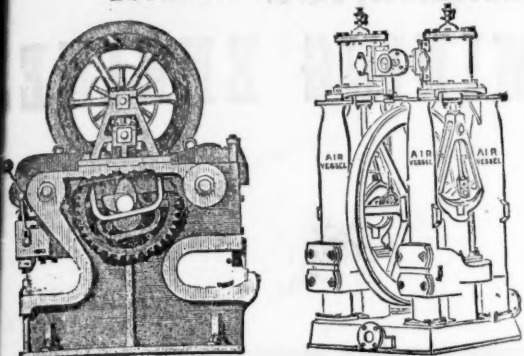
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No. 2070.—VOL. XLV.

LONDON, SATURDAY, APRIL 24, 1875.

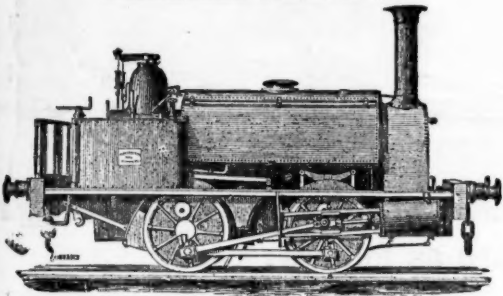
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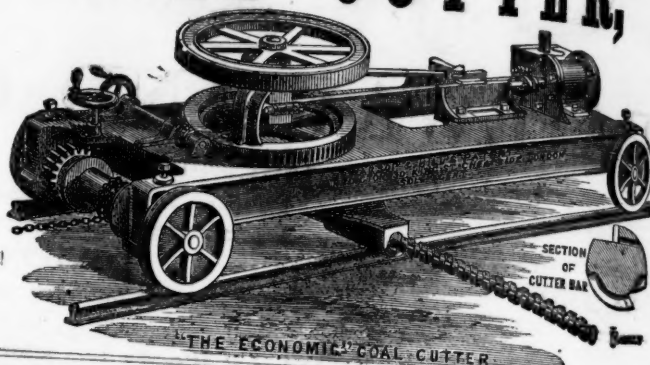
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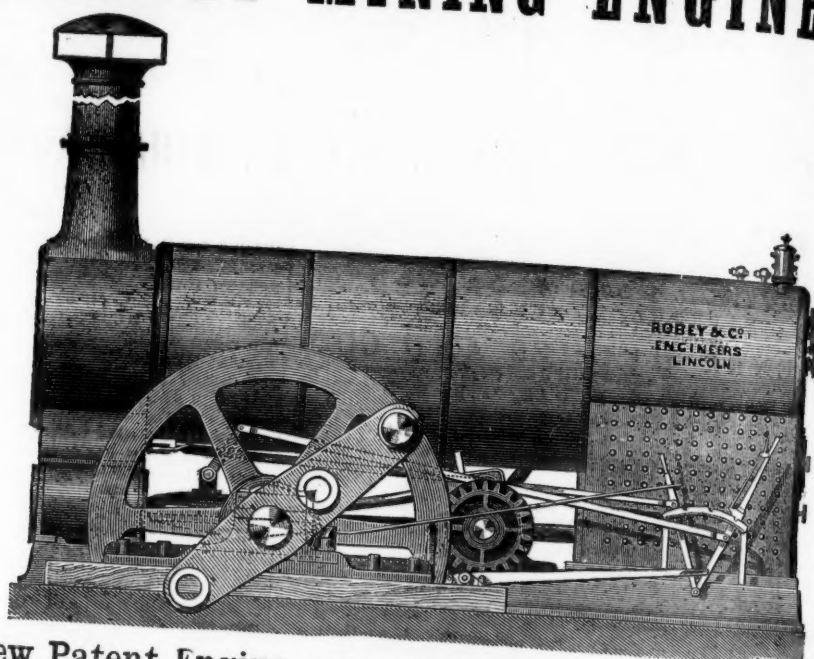
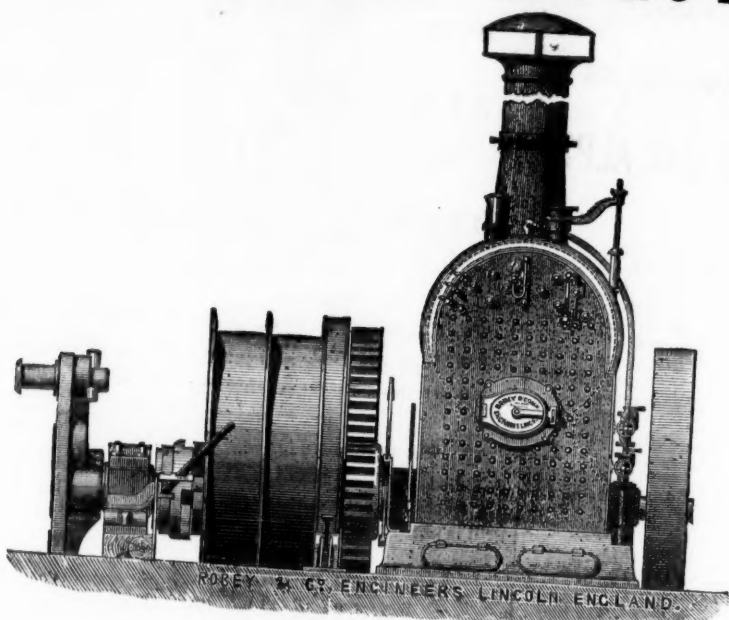
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Original Correspondence.

THE IRON INDUSTRIES OF NORTH STAFFORDSHIRE.

By RICHARD MEADE, Assistant Keeper of Mining Records,
Museum of Practical Geology.

These industries are so intimately associated with the coal field, and its interstratified seams of coal, measures of ironstone, and beds of fire-clays, that a brief outline showing the extent and importance of the coal measure area will be sufficient to make clear the great resources of North Staffordshire. The coal field, triangular in form and possessing an area of 75 square miles, extends from Hanford and Lane End and Longton on the south, to Biddulph on the north, and again from Oakmoor and Chedleton on the east, to Madeley on the west; its resources of coal and ironstone greatly exceeds that of the South Staffordshire coal field, though smaller in its area. It has twice the thickness of workable coal, and many of the seams of coal are roofed by beds of rich argillaceous ores of iron.

The coal measures are divided into Upper, Middle, and Lower Measures, the upper series of which is barren of profitable coal, while the middle or pottery coal and ironstone measures, 4000 feet thick, contain no less than 40 seams of coal, besides numerous bands of ironstone. The lower division includes beds of black shales and flags, with 17 or 18 seams of coal, each having a thickness exceeding 2 ft. In one area of this coal field a thickness amounting in the aggregate to 140 ft. of coal exists; in another, where 24 seams of coal occur, a total thickness of 109 ft. of coal has been ascertained, interstratified with numerous courses of "blackband" or carbonaceous iron ore, varying from 2 to 6 ft. in thickness, and crowded with the characteristic fossil shells "Anthracozya" and "Anthracomya." In the northern part of this coal field, at Rugged Mow Cop Hill, near Congleton, 16 areas of fields, or coal basins, more or less separated, can be distinguished, all geologically of the same age. The resources of this coal field are considerable, presenting a total thickness of 150 ft. of coal, and an available quantity for future use amounting to 3720 millions of tons, as ascertained by the recent Royal Coal Commission Enquiry; while if the whole of the workable seams of coal and ironstone were spread over the area of the coal field, the solid thickness of coal would be represented by 32 ft., and the ironstone by a thickness of 5 ft.

PRODUCTION OF COAL.—The total quantity of coal raised in North Staffordshire in the year 1873 amounted to 3,892,019 tons, the output of 123 collieries, including the quantity raised in the Cheddle coal field; while the total production of the United Kingdom the same year amounted in the aggregate to 127,016,747 tons, of which this district contributed 3 per cent.

The following statement, showing the number of collieries and the production of coal will exhibit the extent of its resources as a coal field in each of the years:—

| Years. | Collieries. | Tons. | Years. | Collieries. | Tons. |
|--------|-------------|-----------|--------|-------------|-----------|
| 1853 | 124 | 1,725,000 | 1867 | 117 | 3,747,814 |
| 1861 | 128 | 2,372,500 | 1870 | 108 | 3,873,562 |
| 1864 | 117 | 3,195,500 | 1873 | 123 | 3,892,019 |

Comparing the production of coal in the year 1853 with that of the year 1873, there is an increase of 2,167,019 tons, or 125 per cent. in 15 years. The ascertained distribution of the output of the year 1873 was as follows:—

| Distribution. | Tons. |
|---|-----------|
| Sent out of district by North Staffordshire Railway | 472,097 |
| Local distribution by railway | 476,454 |
| Local distribution by Trent and Mersey Canal | 297,150 |
| Taken from district by London and North-Western Railway | 83,534 |
| Taken from district by Great Northern Railway | 6,748 |
| Used in blast furnaces, mills, and forges, &c. | 1,377,008 |
| Colliery consumption | 29,000 |
| Used at potteries, brickworks, &c. | 750,000 |
| Domestic and other local consumption | 400,000 |

Total of North Staffordshire 3,892,019

IRONSTONE DEPOSITS.—The ironstone measures of this coal field are no less remarkable than the seams of coal; they are extremely numerous, and exist abundantly in the districts of Longton, Hanley, and Newcastle-under-Lyme. In a section of measures at the Longton Colliery, of 250 yards, nine distinct seams are worked. At Apedale, three miles north-west of Newcastle-under-Lyme, the principal measures occurring are the "Black Band," "Red Shag," "Bassy Mine," and "Red Mine," having a thickness respectively of 4, 6, 7, and 9 ft.

The following are the more important measures of ironstone worked, the yield varying according to the thickness and regularity of the seams. At Shelton the "Red Shag," a blackband ironstone, has a thickness, exclusive of shaly partings, of from 15 to 17 in., and is largely exported to the districts of South Staffordshire in a calcined state. The "Gutter" ironstone, though somewhat poor at Shelton, yet in another part of the field attains a thickness of 6 ft.; this stone, when calcined and mingled in certain proportions with hematite, is employed as a "puddle ore." The "Red Mine" of Silverdale and Apedale lies upon a seam of coal, and is variable in thickness, the average of which may be taken as 14 in. The "Bassy Mine," also called "Red Mine," another important seam, well developed in the eastern part of the coal field, where it has been extensively wrought; this "Bassy Mine," at Shelton, has a thickness of 30 in., and is calcined in large heaps of 2000 tons in the district. At the Lane End ironworks these "blackband" measures—that is, the "Red Shag" and "Red Mine"—are employed in about equal proportions with argillaceous ironstone, chiefly the "Pennystone" in the manufacture of pig-iron; some Lancashire hematite, or Froghall ore (to which reference will presently be made), is added. The other measures occurring are the "Cannel Mine," a clay ironstone in six bands of nodules, giving a thickness of 12 in., and reputed to yield 18 cwt. of ironstone to the square yard. The "Gubbin," a seam of from 13 to 16 in. thick, interstratified with partings of shale, bears a strong resemblance to the ironstone seam of South Staffordshire, known by the same name. The "Cannel Row" and the "Pennystone" measures of Shelton are other important seams, the latter consisting of three bands of an aggregate thickness of 20 in. The "Deep Mine" and "Chalky Mine," at Lane End, the former consisting of three bands, and yielding 10 cwt. to the square yard, while the latter, at Shelton, is 12 in. thick, in four bands, and yields an average of 12 cwt. of ironstone per square yard.

In the Cheddle district, at Froghall, Ipstones and Cousall, the valuable Churnet Valley ore, a calcareous hematite, occurs; it was discovered accidentally some 20 years since, while a search was being prosecuted for a deeper seam of coal. This Churnet Valley ore exists in a seam varying in thickness from 6 to 20 in., and embedded in the red shales of the lower coal measures; it is a limestone highly impregnated with hydrated peroxide of iron, and though its area is limited it has in past years furnished large supplies of ironstone, which has recently considerably diminished, and its ultimate exhaustion may at no distant period be expected. This Churnet Valley ore is not calcined previous to its reduction, but is employed in admixture with other ores, the large amount of limestone it contains (14.61 per cent.) rendering it most valuable as a flux.

The argillaceous ironstone of North Staffordshire is calcined on an extensive scale, by which the metallic iron is concentrated, the bulk considerably reduced, and in this state it is largely exported to South Staffordshire to supply the furnaces of that district. The siliceous and argillaceous ironstones of the district lose in weight by calcination from 30 to 36 per cent., the yield of metallic iron by analysis in the calcined state being 65 per cent. The "blackband," or carbonaceous ironstone, loses by calcination from 50 to 66 per cent. in weight, while the metallic iron in the calcined state yields by analysis nearly 70 per cent.; this high percentage of metallic iron is not, however, secured practically in the blast-furnace in the operation of smelting.

The object of this notice is not to enter into any detailed geological description of the Staffordshire mineral field, but rather to state briefly and concisely the leading facts bearing on its extent, resources, and development of its coal and iron industries in a collective manner, to serve as a reliable reference and comparison in the future. Having referred generally to the conditions in which the ironstone measures occur in this area, the following statement will show approximately the distribution of ore calcined and un-

calcined, by the Trent and Mersey Navigation and the North Staffordshire Railway in each of the years:—

| Year. | Canal. | Railway. | Total. |
|-------|---------|----------|---------|
| 1861 | 231,965 | 117,233 | 349,198 |
| 1863 | 293,800 | 237,259 | 531,059 |
| 1865 | 263,933 | 286,558 | 550,491 |
| 1867 | 226,806 | 318,708 | 545,514 |
| 1869 | 215,796 | 380,094 | 595,894 |
| 1871 | 215,452 | 509,055 | 724,507 |
| 1873 | 198,368 | 464,983 | 663,351 |

The details of distribution of the North Staffordshire ironstone for the years 1863, 1869, and 1873, by railway and canal, indicates the steadiness and progress which characterise this industry:—

| | 1863. | 1869. | 1873. |
|---|--------------|---------|---------|
| By canal (Trent and Mersey Navigation). | Tons 109,874 | 116,487 | 108,939 |
| Calcined ironstone exported | 79,101 | 58,515 | 57,421 |
| Uncalcined ironstone sent out of district | 15,025 | 40,794 | 52,008 |

| | 1863. | 1869. | 1873. |
|---|--------------|---------|---------|
| Total by canal | Tons 203,900 | 215,796 | 198,368 |
| By railway (North Staffordshire Railway). | Tons 145,545 | 255,880 | 342,072 |
| Calcined ironstone exported | 147,203 | 14,336 | 13,616 |
| Uncalcined ditto | 20,298 | 109,116 | 107,543 |
| Uncalcined ditto, conveyed between local stations | 24,218 | 768 | 1,722 |

The foregoing totals of ore, calcined and uncalcined, may be summarised as follows:—

| | 1863. | 1869. | 1873. |
|------------|--------------|---------|---------|
| By canal | Tons 203,900 | 215,796 | 198,368 |
| By railway | 337,259 | 380,098 | 464,983 |

Gross total.....Tons 541,059 595,894 663,351
And it will here be convenient to explain that of the produce of 1873 595,894 tons was calcined, the remaining 67,376 tons being raw stone. Now, making due allowance for loss in weight by the process of calcination, as previously stated—the blackband ores losing from 50 to 66 per cent., and the argillaceous ores from 30 to 36 per cent.—the actual quantity carried in the year 1873 will be represented approximately by 920,000 tons of ironstone.

ANALYSES OF THE ORES.—The ironstones of North Staffordshire are very fully described in the "Iron Ores of Great Britain," part IV., by Prof. W. W. Smyth, F.R.S., and complete analyses are published by Dr. Percy, F.R.S., made in his laboratory in the Royal School of Mines, in Jermyn-street, in the same memoir, to which we are indebted for many of our facts. The following table will show conveniently the proportion of protoxide of iron, carbonic acid, and metallic iron contained in each of the measures examined, and the gentlemen by whom the analyses were made:—

| Clay ironstone measures. | By whom made. | Protoxide of iron. | Carbonic acid. | Metallic iron. |
|--------------------------|----------------|--------------------|----------------|----------------|
| Red Shag | Mr. A. Dick | 46.53 | 30.77 | 36.39 |
| Gutter Mine | Mr. J. Spiller | 34.22 | 32.52 | 27.33 |
| Red Mine | Mr. A. Dick | 50.73 | 33.89 | 39.84 |
| Bassy Mine | ditto | 45.53 | 32.12 | 39.13 |
| Cannel Mine | Mr. J. Spiller | 41.80 | 32.40 | 32.64 |
| Pennystone | Mr. A. Dick | 46.35 | 32.46 | 38.29 |
| Deep Mine | ditto | 48.33 | 32.76 | 37.83 |
| Chalky Mine | ditto | 51.07 | 33.63 | 39.88 |

Regarding the above analyses, it may be assumed that the average yield of the clay ironstone of North Staffordshire is about 36½ per cent. of metallic iron.

The Froghall ore is thus described in the same memoirs by Mr. A. Dick as a "calcareous hematite; colour, brownish-red; structure, compact and homogeneous; a vein of calcareous spar occurs in it." The following results tabulated shows its composition:—

| Ore Dried at 100° Centigrade. | Percentage. |
|-------------------------------|-------------|
| Peroxide of iron | 52.83 |
| Protoxide of manganese | 0.81 |
| Lime | 14.61 |
| Magnesia | 5.70 |
| Carbonic acid | 18.14 |
| Phosphoric acid | 0.32 |
| Sulphuric acid | 0.28 |
| Silica | Trace |
| Water | 4.75 |
| Organic matter residue | 1.39 |
| Ignited insoluble residue | 0.04=98.78 |
| Iron, total amount | 36.98 |

PIG-IRON MANUFACTURE.—The earliest evidence of the manufacture of pig-iron in North Staffordshire is afforded by a return to Parliament in the year 1796, when it was ascertained that the only existing works at that time were those at Apedale, of Messrs. G. Parker and Co., and Silverdale, of Mr. R. Sneyd, the furnace at Apedale producing 2100 tons, and that at Silverdale 2600 tons, or an aggregate of 4700 tons of coke pig-iron. In the same year, 1796, the production of pig-iron in Great Britain was as follows:—

| Furnaces. | Pig-iron. |
|-----------|-----------------------|
| England | 76 Tons 121,327 |
| Wales | 28 45,994 |
| Scotland | 17 16,086 |
| Total | 121 183,407 |

These figures give the average make of each furnace as 1512 tons. From this date there is no reliable source of information available for comparison until the year 1839, the produce of this district being included in that of South Staffordshire. In the interval, however, the foundation of many important works were laid, and their powers of production since that period have been greatly extended. When in 1839 the make of pig-iron in North Staffordshire was ascertained it amounted to 18,200 tons, the produce of seven furnaces, or an average of 2600 tons per furnace, which, when compared with the year 1796, shows an increase of 1088 tons per furnace. Advancing to the year 1840 the make of pig-iron had increased to 20,500 tons, and in the year 1847 to 65,520 tons, when the following were the works and firms in operation, with the furnaces built in blast, and the quantities of pig-iron made at each works. The figures are obtained from a Parliamentary Return:—

| Works. | Owners. | Built. | In blast. | Pig-iron. |
|------------|---------------------|--------|-----------|-----------|
| Apedale | R. E. Heathcote | 3 | 4 | 18,729 |
| Erris | Earl Granville | 3 | 3 | 7,280 |
| Kidsgrove | Thomas Kinnersley | 3 | 3 | 13,520 |
| Lane End | W. H. Sparrow | 3 | 2 | 8,320 |
| Madeley | Thomas Firmstone | 3 | 2 | 4,160 |
| Silverdale | R. Sneyd | 2 | 2 | 7,280 |
| Tunstall | Williamson Brothers | 2 | 2 | 6,240 |

Total.....19 65,520
The next return to which it is desirable to call attention is for the year 1852, when of the 21 furnaces built in this district 17 were in blast, and produced 90,000 tons of pig-iron, the average yield of each furnace being 5300 tons. For purposes of comparison it will be useful to give in detail the production of each iron-making district in the year 1852, as recorded by Mr. Braithwaite Poole in his Statistics of Commerce, which is as follows:—

| District. | Built. | In blast. | Pig-iron. |
|--------------------------|--------|-----------|-----------|
| Durham | 26 | 18 | 110,000 |
| Northumberland | 13 | 7 | 35,000 |
| North Wales | 13 | 6 | 30,000 |
| North Staffordshire | 21 | 17 | 90,000 |
| Shropshire | 144 | 113 | 775,000 |
| South Staffordshire | 159 | 127 | 120,000 |
| South Wales | 162 | 135 | 725,000 |
| Ditto anthracite | 35 | 12 | 31,000 |
| Yorkshire and Derbyshire | 42 | 35 | 150,000 |
| Total | 655 | 497 | 2,701,000 |

We now advance to a period when statistics of our pig-iron production are regularly published, and here it should be mentioned that in the year 1853 the Mining Record Office, which had previously, since the year 1848, collected and published the details of produce of the tin, copper, and lead mines of the United Kingdom, now extended its enquiries to the production of coal, iron ore, and pig-iron, the results of which have since been recorded in the annual volumes of Mineral Statistics of the United Kingdom, and from which is drawn the following statement, showing the number of furnaces built, in blast, and the quantity of pig-iron made in North Staffordshire in each of the years:—

| Year. | Built. | In blast. | Pig-iron. |
|-------|--------|-----------|-----------|
| 1854 | 28 | 21 | 104,000 |
| 1855 | 28 | 20 | 130,560 |
| 1856 | 28 | 25 | 136,308 |
| 1857 | 31 | 25 | 146,950 |
| 1858 | 33 | 23 | 184,455 |
| 1859 | 35 | 25 | 217,996 |
| 1860 | 35 | 28½ | 210,335 |
| 1861 | 36 | 25 | 229,913 |
| 1862 | 43 | 36½ | 303,378 |
| 1863 | 35 | 31 | 288,306 |
| 1864 | 36 | 30½ | 275,925 |
| 1865 | 39 | 31 | 283,103 |

A reference to the above table shows a slight falling off in the production since the year 1870; this can only be regarded as temporary, the make of later years showing an increased production, which in 1874 will probably exceed that of any previous year. To render this section of the enquiry complete, it may be stated generally that of the following list of works, owners, &c., as they stood in the year 1873, the Biddulph Valley and Shelton Works were established about 20 years since, the New North Staffordshire Company's Works in the year 1870, and the works of the Chatterley Company more recently, in 1872:—

| Works. | Situated. | Owners. | Furnaces. |
|------------------|-----------|--------------------------------------|-----------|
| Apedale | Newcastle | Stanier and Co. | 8 |
| Silverdale | Ditto | Stanier and Co. | 5 |
| Biddulph Valley | Biddulph | Robert Heath and Sons | 3 |
| Chatterley | Kidsgrove | The Chatterley Iron Company | 3 |
| Clough Hall | Stoke | Kinnersley and Co. | 4 |
| Goldendale | Stoke | Williamson Brothers | 4 |
| Lane End | Longton | Thos. Goddard and Sons | 2 |
| Shelton | Hanley | The Earl Granville | 2 |
| Talk-o'-th'-Hill | Newcastle | New N. Staff. Coal and Iron Co. (L.) | 2 |

Total of North Staffordshire 39 31

IRON ORE USED IN MAKING PIG-IRON.—In the year 1872 it has been ascertained that in the manufacture of 275,925 tons of pig-iron 723,400 tons of ore of all kinds was used, and in the year 1873 in the make of 283,103 tons of pig-iron, ores amounting to 779,000 tons were employed. These quantities give an average of 52½ cwt. of raw uncalcined stone to each ton of pig-iron made, and the following statement shows approximately the various places from which the ores were derived:—

| Source of supply. | 1872. | 1873. |
|---------------------|--------------|--------------|
| North Staffordshire | Tons 559,000 | Tons 502,504 |
| Oxfordshire | 3,200 | 361 |
| Northamptonshire | 4,000 | 4,333 |
| Lincolnshire | 15,450 | 11,326 |
| Various places | 143,750 | 163,390 |
| Total | 723,400 | 779,000 |

In the last-named quantities from "various places," there is reason to believe some portion is the produce of the district, with a proportion of furnace mill cinder, containing a large percentage of metallic iron, and some hematite from Lancashire.

COAL USED IN PIG-IRON MANUFACTURE.—In the statement of Dr. Macnab, previously referred to, bearing upon the question of coal used in iron manufacture in the year 1796, is found a very interesting calculation as follows, showing the quantities of coal consumed in raising coal, ironstone, and iron ore from the mine, and in the final completion of 1 ton of iron in rods for the manufacturer:—

| | Tons cwt. |
|---|-----------|
| Small coal in the blowing engine | 1 3 |
| ditto to torify the raw material | 1 11 |
| ditto to work the hammer engines | 0 18 |
| ditto to work the mill engines | 1 0 |
| Large coal coked to be used in furnace | 8 5 |
| ditto to refine the pig-iron | 1 2 |
| ditto in puddling furnaces | 1 3 |
| ditto in the heating furnaces | 1 15 |
| ditto in the mill furnaces | 1 7 |
| ditto in workmen's houses | 0 8 |
| ditto in steam-engines to drain the mine and draw the ironstone and coals | 0 19 |
| ditto consumed in pitmen's houses | 0 12 |
| Total | 19 0 |

It will be seen by a careful examination of the above items that in the year 1796 the quantity of coal used in the manufacture of a ton of pig-iron was little short of 10 tons. Fourteen years later the quantity of coal required in Staffordshire (in 1810) is stated by Mr. Mushet, in his papers on Iron and Steel, to have been 5 tons. In the year 1840 Mr. William Jessop ascertained that 4 tons 1 cwt. was used; again, in the year 1854, we have the authority of Mr. John Hedley, of the Silverdale Works, in his carefully-written paper on the North Staffordshire Coal Field, stating the following as the proportion of coal employed in those works in the manufacture of a ton of pig-iron—namely, 42½ cwt. of coal and 13 cwt. of slack coked for the furnaces, with a further 19 cwt. of slack for the hot-blast apparatus and blast-engine, or a total quantity of 74½ cwt. of coal to each ton of pig-iron made; later in the year 1869 the result of the Coal Commission Enquiry showed a further reduction, 60 cwt. of coal only being required. In the year 1872 the quantity of coal employed in the manufacture of 275,925 tons amounted to 817,753 tons, this included all purposes in the operation where heat was required, and gives an average of 59 cwt. of coal to each ton of pig-iron. In the year 1873, when the make of pig-iron amounted to 283,103 tons, there was used 830,119 tons of coal, or an average of rather less than 59 cwt. of coal to each ton of pig-iron, indicating a watchful economy in the use of fuel.

MILLS AND FORGES, AND COAL EMPLOYED.—The number of these works present little variation of late years; in the year 1871 we find 429 puddling furnaces and 40 rolling mills, and in 1873 of the former 425 and of the latter 41 engaged in the manufacture of the various forms of bar and merchant iron. The following is a complete list:—

| Name of Works. | Name of Firm. | Situated. | Pudd. Fur. | Rolling Mills. |
|------------------------------|--------------------------|-----------|------------|----------------|
| Biddulph Valley & Ford Green | Robert Heath and Sons | Tunstall | 90 | 6 |
| Ravensdale | ditto | ditto | 54 | 8 |
| Chesterton | Chesterton Iron Co. (L.) | ditto | 21 | 2 |
| Clough Hall | Kinnersley and Co. | Stoke | 77 | 6 |
| Shelton | Shelton Bar Iron Co. | ditto | 69 | 2 |
| Berry Hill | William Bowers | ditto | 21 | 7 |
| Cliff Vale | Joseph Ball and Son | ditto | 26 | 5 |
| Silverdale | Stanier and Co. | ditto | 56 | 5 |

Total of North Staffordshire 425 41

In the above-named works in each of the years 1872 and 1873 there was employed not less than 465,000 tons of coal, giving an average consumption of 1100 tons to each puddling furnace. The most extensive of the above works are those of Messrs. Heath and Sons, possessing a total of 144 puddling furnaces (six of which are Danks's patent revolving machine puddling furnaces), 14 rolling mills, and powerful machinery for the manufacture of anchors, while their mills are capable of producing angle iron of all sizes and lengths.

The iron made at all these works have a wide reputation. That of the Shelton Bar Ironworks, which is in close proximity to the blast-furnaces of Earl Granville at Shelton, and those of Messrs. Heath and Sons, at Biddulph Valley and Norton, may be especially referred to for the superior quality of their iron plates, largely employed in our ship-building industries, and in the manufacture of which the best Shropshire forge and hematite pig of the North is largely and advantageously employed.

EXPLOSIVES USED IN BLASTING—DYNAMITE v. POWDER.

Sir,—Mr. Orlando Webb's lucid statement, published in the Supplement to the Mining Journal of April 10, on the superiority of dynamite over other explosives used for blasting must be interesting to every lover of progress, especially in these depressed times, when the most able and energetic mine managers in Cornwall are driven to their wit's end trying to stem the torrent of adversity. Those who wish to use every possible means to keep pace with the times I would respectfully ask to read Mr. Webb's remarks on the great saving effected in the St. John del Rey Mines, Brazil. Your correspondent "A. B.," however, says dynamite is used in very few mines in Cornwall, and is not superior to powder in sinking, driving, or stopping. I fail to see if dynamite is so superior in Brazil why it is not equally effective in Cornwall. It is not used so extensively in Cornwall, in my opinion, as it ought to be, still it is supplied to no less than 108 mines in Cornwall now, and it will so surely supersede powder in Cornwall as powder superseded the feathers and nippers of olden times. I assure "A. B." that dynamite is not on the decrease in the mines in the Camborne district, but the reverse is the fact. I am sorry, however, some would-be economists are afraid of the first cost, and refuse to have it introduced into their mines, but mark the result—several of the men in the mines preferred to buy dynamite of me and pay cash down, so as to be enabled to pick up a good month's getting easily, then rest awhile, fearing the price would be reduced if they did too much. This is very false economy indeed; why not keep a small stock of dynamite on the mines, as well as gunpowder, and let the men use either, at their own discretion, the cost to be deducted from their contracts in the usual way? Being employed as an agent for

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London, April 24

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the British Dynamite Company, I feel reluctant to speak out in favour of dynamite as I might, but it is to my interest to see the mines in Cornwall in a prosperous condition. I know many mine agents in Cornwall who could, if they choose, give equally satisfactory proofs of the great economy in the use of dynamite as those stated by Mr. Webb. It being so much stronger than powder large bore-holes are not necessary (except for heavy blasts). This is an immense saving in hard rock, when we take into consideration the time and force occupied in boring is as the square of the diameter. For wet porous rock it is invaluable when compared with powder, and if not overcharged in blasting dynamite gives off no bad smell, and little or no smoke. "A. B." errs in stating that dynamite acts downwards; explosives act on all sides equally.

Cambridge, April 21.

STEPHEN WILLIAMS.

THE PICK AND ROTARY SYSTEMS OF COAL CUTTING COMPARED.

Sir.—I noticed that in the Journal of April 10 you invited Mr. Firth to give his views on the comparative merits of the Pick and Rotating systems of Mechanical Coal Cutting, stating that his opinion on such a subject would be invaluable. I was rather surprised at this statement, Mr. Firth being so well known as the proprietor and inventor of the pick machine, and as such scarcely able to give that unprejudiced opinion which you seem to have anticipated. However, having published the results of his comparison, you will, I feel sure, allow me a small space for a further comparison of the principles based on the working of what I believe to be the best rotary machine, either in this country or America. Before going into the merits of the question, I wish to draw your attention to what appears to be an error in Mr. Firth's assumed quantity of work done by the American machine. He bases his calculation on the assumption that the Monitor only cuts at the rate of $\frac{1}{4}$ in. to each revolution of the cutter wheel, making the speed $1\frac{1}{4}$ in. per minute, or only $2\frac{1}{4}$ yards per hour, whereas Mr. Alexander states that the machine is geared to work at the rate of 9 in. per minute, or 15 yards per hour. This is an important difference, and requires explanation. Without stopping to criticise the peculiarities of the American machine, which looks very like a mutilated copy of a certain English patent, I am desirous it should have its full measure of work allotted to it, because however defective it may be in detail it is based on what I believe to be the right system for coal cutting.

I entirely agree with Mr. Firth in his remarks that there are many elements to be considered before coming to a conclusion as to the relative merits of a machine, and that it is out of the question to attempt to go into them now. I am not sure, however, that Mr. Firth's plan of stating what may be called the relative commercial values of the machines is the best, but he having set the formula I will follow it as closely as circumstances will permit, and for the sake of comparison, assume as he does that the work is done in a 4-ft. seam, that the air cylinders cut off at half-stroke, and that compressed air costs 6d. per 1000 ft., at a pressure of 40 lbs. to the square inch. The quantity of work done per hour, and the pressure of air required to do it, I have obtained from the actual working of the machine. This machine has two cylinders, each 7 in. diameter, and 9-in. stroke, making 100 revolutions per minute, driven by compressed air, at a pressure of 28 lbs. to the square inch, and cutting on an average 22 yards per hour, 3 ft. 4 in. under, using 90.48 cubic feet of air per minute. Thus,

$$\frac{44 \times 9 \times 2 \times 100}{1728} = 45.24 \times 2 = 90.48.$$

One yard of a 4 ft. seam, cut 3 ft. 4 in. under, will yield, as per Mr. Firth's statement, 31 cwt.; 28 lbs. pressure of air cut off at the half stroke gives an average pressure of 28 lbs. If 40 lbs. of initial pressure of air costs 6d. per 1000 ft., 28 lbs. will cost 4d. Then $90.48 \times 60 = 5428.8$ cubic feet of air per hour, or 54.288 cubic feet per 10 hours. The machine cuts 22 yards, yielding as above 34 tons 2 cwt., per hour, or 341 tons per day. Then,

$$\frac{54.288}{341} = 159.2 \text{ ft. per ton,}$$

which, at 4d. per 1000, equals .636, or 8-12ths of a penny nearly per ton for cost of air. The relative costs of air used in cutting a ton of coals is, therefore, as under:—

The Monitor, as stated by Mr. Firth (but subject to correction) 15d.
Mr. Firth's pick machine 1 1-12th
The Gillott and Copley rotary machine 8-12ths
The quantity of coal under-cut in a day of 10 hours, in a 4-ft. seam, by each machine, assuming, as Mr. Firth does, continuous working, is—
The Monitor, as stated by Mr. Firth (subject to correction) 50 tons
Mr. Firth's pick machine 100 "
The Gillott and Copley rotary machine 341 "
It is to this latter statement that I wish to draw particular attention, showing as it does the enormous superiority of the rotary as compared with the pick principle in producing a large quantity of coal in a given time, and this is really of far greater importance to the coalowner than the difference of a few fractions of a penny in the cost of the compressed air. ISAAC GRAY BASS.

Bow-street, Sheffield, April 21.

ELECTRICAL INFLUENCE IN GOLD DEPOSITS.

Sir.—After many years of investigation I have come to the conclusion that, although heat may have had some share in the production of native gold, electricity, either alone or in combination with analogous agencies, must have had more. For instance, some rocks of crystalline limestone in France, being repeatedly struck by lightning, were found to be covered with a layer of silver, which must have been developed from a base. A beautiful experiment, first tried by Mr. Crosse, is to place on a board a mass of moist pottery clay, mixed with metallic particles very minute, in the form of a metallic oxide. Divide the clay in two parts by a knife; bring them together till they touch. On sending an electric current through the whole mass in the cleft is formed a metallic deposit, a miniature vein. M. Becquerel has tried with electricity the argenteiferous soils of various countries, and large ingots of silver were thus drawn from them, and of great purity. There is much more of this in the article from which I extract, but this is sufficient.

It is stated by Dr. Ure that gold is found only in the metallic state, sometimes crystallised, in the cube and its derivative forms; also in threads of various size, twisted and interlaced into a chain a minute octahedral crystals. It predominates to such a degree as to constitute veins by itself; it is either disseminated or imparted in stony masses, or spread out in thin grains on their surface, or implanted in their cavities, under the shape of filaments or crystallised twigs. Alluvial nuggets, of course, are disintegrated from these. Hitherto, it seems, no ore gold is found, but there must be a metallic base from which it has been developed. Again Ure tells us that in the Andes of Chili some silver mines are explored, which afford ores of an earthy or ferruginous nature, mingled with imperceptible portions of ores with a silver base, called pacos. The mines of Cero are actually the richest in all Peru. The ore is an earthy mass of a red colour, containing much iron, constituting what they call pacos. Near Clausthal, Hartz (Germany), a certain ore of red oxide of iron occurs, above most abundant deposits of ores of lead and silver, whence named the "iron hat." It appears the iron ore, rich in silver, worked in America, named pacos, has some analogy with this substance.

Now, it is singular that when I sent home about a half-ton block of iron to the late Exhibition in London from the "Iron Hill," at Penrice, near Angaston, in South Australia, I found that this iron apparently died out a few feet in depth, and I found under it some ore agreeing with the foregoing descriptions, and a specimen being assayed gave 3 to 5 dwts. gold and about the same of silver per ton, yet on pounding and washing it very carefully I could find no appearance of native gold even with a lens, but I firmly believe that had I had inserted a lightning-rod in the ore, and a charge of electricity should have traversed it, the metal would have appeared. I have a specimen of the silver ore from the Real del Monte, Mexico, showing crystals of argental gold imbedded, and the stone is identical in appearance with some obtained from this iron hill. It is also singular that in South Australia (say at Mount Rufus, Waukaranga, and the Victoria Mine, near Adelaide) solid iron ores are found

richly impregnated with gold. I saw a specimen of hematite or kidney iron from near Gummeracha, quite plated over, as it were, with gold. The Viscount Canterbury nugget, of Victoria, was found where "quartz and ironstone boulders were found in the neighbourhood of the nugget, some as large as the precious lump itself; but, strange to say, the colour was not to be found in the wash dirt surrounding it. Cavities and hollows were numerous, filled with a ferruginous clay, containing much fine gold, and a very little quartz." Deeson and Oats's Welcome Stranger nugget was found where "they pointed out to us a peculiar kind of red clay, similar to half-burned brick, which they regard as indicative of gold, and which has always been associated with their larger finds, and particularly so with the immense mass of gold found by them."

These facts are certainly worthy of consideration, for how do we know but that in Victoria some of these earthy matters may not contain gold, although invisible to the eye, and which could be extracted under a suitable process. I shall be happy to show my specimens, and explain these matters to the best of my ability, to any one interested. As it seems that there is an idea abroad that the gold in Victoria is falling off, I can only say that there is an immense quantity in South Australia which only wants capital and enterprise to develop it. Unfortunately some of our richest gold districts are on the land of private individuals, who refuse to allow the working of it. Some of the richest and most peculiar gold specimens in the world have been found in South Australia, and of this I speak with certainty. I have not the least interest in South Australia, but I can safely say that it is the richest mineral country in the whole globe. I could not explain these matters in a shorter letter, and so must apologise for its apparent length, my object being to throw out any information which might be useful to the public.—Melbourne, Jan. 28. HENRY MARSHALL.

ROYAL COLLEGE OF SCIENCE FOR IRELAND.

Sir.—In last week's Journal information is asked for respecting the Royal College of Science, and as to the cost of living in Dublin. I am a mining student, just completing my third year's course here; and with regard to the cost of living, I have found that it amounts on an average to between 17. and 25s. per week. I send you a copy of the College Directory, so that you may see the subjects of instruction. You will observe that the College possesses an advantage over the Royal School of Mines, inasmuch as some mathematics, and surveying are taught at the former, whereas they do not enter into the curriculum of the latter. Should any of your readers think of joining the College next session permit me to inform them from experience that unless they are prepared to work—and to work hard, too—they had better stay away. ASSOCIATE STUDENT.

Dublin, April 19.

AN INGOT OF CYMRIC COPPER.

Sir.—George Gordon Noel Byron was, I am afraid, rather a naughty fellow. He certainly did some naughty things, and assuredly wrote some naughty poetry. Still, he was generally a good judge—especially of women—and always a great poet, but, like all judges, he was liable to err, and in nothing did he err more, I think, than when he said that

"Every woman is at heart a rake."

Had he said that every woman is at heart a saint he would have been nearer the truth. Given at the natural period a husband to love, and the duties of maternity to perform, depend upon it that Byron is nearer wrong than I am. But had he said that every man is at heart a gambler he would have "hit the gold." Aye, there it is in a word—hit the gold. The very uncertainty of speculation is the charm that eggs men on. "Seven's the main," but surely double fours and fives are there, and may and do turn up, while double sixes have been seen often enough to tempt the hopeful or to nerve the desperate, while deuce ace is blindly ignored or steadfastly hoped against.

Were it not for this natural spirit of risk (or enterprise, or speculation, or hazard, or, if you will have it, reckless daring) the world would still have been in the idle hands of

"Those partridge breeders of a thousand years
Who have done nothing since Egbert."

What urged Cook, Columbus, Pizarro, Marco Polo, Abyssinia Bruce, &c., to dare "every ill that flesh is heir to?" What but exciting risk! gallant hazard! speculative gambling!

But, why on beating out to thinner and thinner leaf the gold the world gambles for? It is true, and there's an end on't. Were it not, Mr. Editor, would your splendid Journal be crammed all through its multitudinous columns with "spec" of every conceivable kind? Certainly not! Individual thought may evolve steam-engines like Worcester's—electric telegraphs like Wheatstone's—spinning jennies like Arkwright's—sun pictures like Daguerre's—but would they have made the century of their birth an epoch? Would they have imprinted an indelible mark on all future ages had not speculation, risk, gambling, if you will, practically applied them? Again I say—Certainly not! And yet '46 was a terrible year, and many a frail, aye and strong, barque, too, failed to weather the storm, but railways were established for all time amidst all that appalling wreck.

What brought the Phœnicians here in the year One of our commercial existence? Tin. Was there no risk there? no gambling there? Had they remained quietly and safely within the confines of the tideless sea, would metalliferous little Britain have now been mistress of the main? No! In searching for the one ore others were discovered; and then another great want was felt, and met.

Forests were disafforested—felled by those old, old charcoal-burners for those old, old smelters of our year One. A substitute was needed, and found—coal—KING COAL! What a jolly, brilliant reign that sable old nabob has had! and, in spite of the lugubrious mutterings of Jevons and Co., he'll kick up a shine yet for many an age to come. So, by a circumlocutory style of narration, I approach somewhat nearer my "ingot of Cymric copper." Not yet awhile, though, will you see it, for, like that prince of digressors—Lawrence Sterne—but only like him in digressing, I need hardly stay to say I shall not introduce you to Widow Wadman yet, although Uncle Toby's fortifications and the Corporal's queue have been in sight some time. Be patient, gentle reader. Why is it that all readers are supposed to be gentle? I know a few the word scarcely describes! Let me gang my ain gait, and I'll be there or thereabouts at my ain sweet will. Having at length reached historic Deva, via Stockport, down whose chimneys we might have looked, but didn't, to Crewe—huge centre of the London and North-Western's engineering—crossing on our way the lovely Bollin and much less lovely Weaver. We then bore due west to Mold, known to most as a good market town, depending for its trade on the neighbouring deposits of coal, clay, and lime, but known also to a few, and reverently known, too, as the burial place of glorious RICHARD WILSON—the British Poussin, Salvator Rosa, and Hobbins combined. I would rather have painted his "Niobe" or "Last Man," and lived through them to all time, than owned all Mold—i.e., had the possession of the plucky Flintshire town given, as suddenly-grown wealth frequently does,

"A fat paunch and a lean pate."

Denbigh was soon reached. There our Doc-car-r-r (as Mounseer pronounces it) met us, a true Welsh nag in the shafts—a little above a Galloway and yet a little under fifteen, black-brown (stoutest colour), short-legged, game as a pebble, but, "pity 'tis, 'tis true," the common penalty of that game-never-say-die breed—gone before! Just the size, build, and sort, for our journey of eight mountainous miles, with ups and downs sufficiently frequent and sufficiently pronounced to make a native of Saxony feel quite at home. A tight rein and a rather severe bit sufficed to keep him up, and that, too, at a pace quite fast enough for our purpose, but too fast for our taste, as we would have liked to have loitered lovingly here and there, and mentally treasured up some of its choicest "bits."

Then through Henllan (old village), with its church tower—not built by Wren or Inigo, I'll vouch. Gradients still severe—one in I don't know how many, but too few, I am sure of that, for four in a two-wheeler! Coachee's nerve or muscle, or both, kept up the trembling steed, and counteracted the downward tendency of those shaky knees. At length we landed at our rendezvous without straining a buckle—a romantically, aye, poetically, situated copper mine. Never mind its name; never mind the name of its distin-

guished owner; neither need canvassing—ergo, they will never be canvassed! Suffice it to say that it lies on the very verge of the little Aled, which, I think (for I have never seen it, and have no summit of the Hierathog hills lying east and south. In these high sanitary days, with their keen-scented local boards exercising benevolence that here the immediately adjacent towns of St. Asaph, Rhyl, and Abergel would have sought an inexhaustible supply of famous loch. The Aled and Elwy drain the eastern slopes of these Hierathog hills, joining and running into the Clwyd somewhere above Rhuddlan. Another stream, whose name I know not, helps round its southern shoulder, then steals away westward at the foot of Carnedd-y-Filiast, and, forming the boundary of the counties of Carnarvon and Merioneth, falls into the bay of Cardigan at Portmadoc.

Here then, within the gates of a gentleman's park, amongst a splendid growth of well chosen trees, sheltered from the east and north as though comfort and caloric had something to do with the choice of site, we found our mine. We saw on the little wharf at the mouth of the edit, or day level, specimens of ore of considerable richness, and if there be plenty where they came from we should find no difficulty in coining those "tokens" which are said to be so difficult to take care of. Copper was there in every natural form and every natural condition and combination, excepting malachite and azurite—sulphuret of copper, oxide of copper, grey copper, peacock copper (well named)—yea, copper in every form but that of PENCE! Aye, "there's the rub."

It is an old, very old, mine, and has been exhausted to the depth of its present very shallow workings. There is, however, indubitable evidence of plenty being left lower down. Of course, there is the cost of opening the lower ground to be provided for. How can that be best and most easily done is the problem we have now to solve. Eureka! I have it. Pour into a new 40-fathom shaft (which I would sink outside, and not, as the present one is, inside the mine) and into new levels following the lodes, the walls of which are as well defined as the sides of a corridor, a little of the money that is going a begging in Threadneedle-street, and I'll answer for it that it will soon recoup the investors, and leave them a handsome profit too. With or under the copper there is undoubtedly lead. You find it intermixed with all the copper ore, and amongst the waste that has been broken to the size of gravel to cover the carriage drive argenteiferous lode of beautiful quality is exposed.

"Glancing and sparkling like a gem of fifty facets."

The immediately neighbouring hills are being worked now for lead, and there is no doubt remaining that that metal, if not copper, may be worked to a profit, especially when they shall have arrived at such dimensions as will warrant the laying down of a railway to Rhyl, and be worked by the inexhaustible supply of water standing so near, so saving the enormous cost of steam. After a thorough exploration of every hole and crevice, excepting one winze some 6 or 8 fms. deep, where ore is now being got, we again ascended those frightful ladders—"straight as a yard of pump water"—aye, and in some places, an Irishman would say, "straighter too," for some of them are a little "out of plumb"—i.e., against the climber! Steady nerves, firm grip, hard heads brought us all safe to the shaft mouth, where we found our courteous landlord ("with that touch of sweet civility" that marks the gentleman with a stamp no cad can counterfeit!) waiting for our return, and carrying in his kindly hands a "hurricane lamp" to guide our unaccustomed feet. During our absence in those Plutonian regions he had with generous forethought, feeling that "after labour should come refreshment," ordered us a hot luncheon. Knowing our time was short and train pressing, and finding, perhaps, the leisurely step of his butler moving at its ordinary dignified pace a little irksome to his impetuous spirit, and wishing to see us feed before he'd seen us speed, put on the little leg of prime mountain wether with his own deft hands, filled our beakers, and strove, and not ineffectually, to fortify us by his generous and most unostentatious hospitality for our return journey. This little episode, so unusual and, in fact, so far as I am myself concerned, so completely unique in mining matters, situated as mines ordinarily are amongst barren and almost inaccessible places, where the half-famished prospector is driven to take pot luck at the nearest pub., you can readily imagine that Saturday, April 17, will be scored as a red-letter day, or marked in our mind's annals with a white stone to commemorate our first visit to a mine situated within the confines of a gentleman's park, and within a hundred yards as the crow flies of his hall door. Oh! and how snug the situation of that hall. How good every arrangement seemed! How homely! Oh! how peaceful! How I longed to see the library. It must be like the house, massive, unpretentious, large, full—full of hoary tomes, writ by illustrious pens. And then, the supreme, delicious quiet reigning over all. No sound but the murmuring Aled,

"And all the windy clamour of the rooks."

But, our "trap" approacheth, and now for the "ingot of Cymric copper," so long promised, so late deferred. Just as we were getting away, having bidden, and been bidden, a hearty farewell, our zealous host brought out to us a mass of smelted copper, 30 or 40 lbs. in weight, run into a mould the shape of a cheese—pray excuse the homely simile; I have not time to think of or coin another—with an inscription on its side giving the name of the mansion, and the date—1788.

Strange to say, and it only shows how utterly we are the creatures of circumstances or accident, when the foundations of the house were excavated the metal which formed this ingot was found cropping up to the surface, and as much as we saw was smelted as a family historic relic. Thus—

"Full many a gem of purest ray serene
The dark unfathomed caves of ocean bear;
Full many a flower is born to blush unseen,
And waste its sweetness on the desert air."

Yours inextinguishably,
ASBESTOS.

ST. JOHN DEL REY MINE.

Sir.—Doubtless most of your readers, and, perhaps, shareholders too, have forgotten that previous to the fire the produce was some 53,000 oits. monthly; now it is about 40,000 oits., but gradually increasing. As 10,000 profit is now being got monthly, when 50,000 oits. are given, and may be expected, in six months the profit will be at least 13,000, as the cost will not increase in a like manner. The cost of supervising is now some 33 per cent., against 50 per cent. as of old. G. W.

CAPE COPPER MINING COMPANY.

Sir.—The Colonial officer's reports for the past year have been issued, by which it appears the large quantity of 12,949 tons of copper ore has been sent down to the shipping port from the mines within the year; that 9185 tons have been extracted from the Ookiep Mine in the same period, and that notwithstanding the withdrawal of that large quantity the reserves of ore discovered and *in situ* have increased from 35,000 tons to 37,000 tons, and that, as the superintendent states, does not include a single ton of the large quantity there is every reason to believe is lying below the 63, and which level, on reference to the plans and sections, appears only as yet to have been scratched, and the further development of which must lay open very much greater reserves of ore in this splendid mine, and which is effectually being done, as Capt. Tonkin reports the level south of No. 13 winze, which for some time past has yielded but little copper ore, has now exposed "a splendid bunch of ore," and the stone, which has reached within 4 fms. of the end of the level, yields 11 tons of rich copper ore per cubic fathom, and as we may now expect to hear by any mail the result of the driving of the 80, we need not enter into Capt. Tonkin's sanguine expectations, as set forth in page 11 of the report, but in passing quote his remark that there is an evident indication that the main bunch of ore continues in depth, and that the shaft is no great distance from it." Capt. Tonkin reports of the third mine, Karolusberg, that in the extension of the 10, below the edit, "fine lumps of purple ore were taken out, which assayed 60 per cent. for copper," which looks as if we were possessed of a mine of even greater promise than Ookiep. The several other mines on which trials are being

made appear as yet to call for no remark, unless at Narrap, in the drivings of the 10 fms. of which Capt. Tonkin states at times copper ore of 25 per cent. had been met with.
AN INVESTOR.
London, April 14.

THE CAPE COPPER MINE.

SIR.—The report of this splendid property just in the hands of the shareholders has baffled all the efforts of the "bears" to depreciate it during the last few months. These creatures have been paying "backs" to postpone the delivery of the shares "hoping against hope" that something damaging would turn up, but they have been deeply and sorely disappointed. As the holders have the report in their hands, it is not necessary for me to refer fully to it, but merely call attention to the fact that the reserves of ore have increased to 37,000 tons, worth, when landed in Swansea, over a million sterling. The result will be increasing dividends. As the dividends last year were 4s. per share, and Tharsis only 50s., I cannot see why Cape Copper should be only 35s., while Tharsis are selling at 29s. Cape Copper ought to be well worth 50s. per share.
AN INVESTOR.
Limerick, April 22.

WICHITA COPPER MINING COMPANY.

SIR.—My attention having been called to a notice of the Wichita Copper Mine in the Journal of last week, and as I have the honour of being Chairman of the company I think it right to state that though we have every reason to believe we have an extraordinary mine, yet any statements as to the monthly returns of ore, or of its exact richness, can have, till we have had time to test their truth, very little practical value. The gentlemen now on their way to the mine had, undoubtedly, every confidence in their ability to ship to us 1000 tons of ore within three months after their arrival at the mine, but I can hardly bring myself to believe that, for the present at any rate, we shall be able to remit regular monthly returns of that amount. Of one thing, however, we feel quite assured—that the vendors themselves have the highest opinion of the value of the mine, and their faith in it has taken the most practical possible form. Though it is quite true that the shares are at a high premium, yet I cannot help thinking that it would be better to wait for some tangible results than to put forward statements which at present I think are premature.
Great Cumberland-place, April 19.
JULIUS ALINGTON.

JAVALI COMPANY.

SIR.—As I cannot attend the meeting on Monday, I hope the shareholders will oppose the reduction of directors to three, as remuneration of the directors. Surely 300s. is enough, as it would be for twelve meetings a-year, even for five directors, as it would be, 5s. to each director for every board meeting, and if only three, 8s. 7s. amounts to this—that if the company pays a dividend, for instance, 2s. per share, or 5 per cent.—the directors would have 500s. amongst them, or 8s. 6s. each if five, and 14s. if only three, for each cent. of dividend over the first 10 per cent., so that if the shareholders should get 20 per cent. (no extravagant dividend for a mining company), the lucky directors are to have 1000s. per annum amongst them, or 16s. 12s. if five, and 28s. each if three, for every board meeting. This appears to be the price we are to pay for Sir Leopold Heath; bearing in mind that the old directors have not and did not make the company a success. I am not opposed to fair remuneration, but I am opposed to such extravagant proposals as these, and I hope other shareholders will be so too.

AN ORIGINAL SHAREHOLDER.

JAVALI MINE.

SIR.—Numerous letters have appeared in the Journal concerning this property, some, perhaps, over-estimating, some underrating its value as a gold mine. The last advice received from the manager in Nicaragua showed a profit of 750s., which sum not being so large as in the previous month has caused a fall in the shares, the driest month of the entire year, and, therefore, is without doubt the hottest and water, the returns must of necessity be reduced, by reason of the scarcity of the stones showing that this adventure must soon be a first-class paying concern. The patience of the old shareholders must have been sorely tried since the formation of the Central American Association.
The changeable nature in the yield of gold quartz is proverbial, the same feature being apparent in all foreign gold mines, and the news by next mail may bring far more valuable results, especially if we win our fair share of the manager's unbroken confidence in Javali. I need not say that the hopes of the original holders seem on the eve of being fully rewarded by a certain success. It is well that such a mine as Javali, and a few others, should recover their position, and become rich properties, to restore confidence to the investing public.
EXPECTANS.

SUCCESSFUL AND UNSUCCESSFUL MINING.

SIR.—Much has lately been written under this heading, and one way to remove the evil and obtain the good, laid before your readers; instead of this the communications I have seen, with one or two exceptions, have been to condemn the captains or mine managers of this country, showing up the misconduct of, perhaps, one or two that have come under the notice of the writers, and judging almost every one thereby. Then we have theory and practice brought before us, and one without the other, it is said, will not contribute a good man, nager for a mine, and such are termed "one-legged." We have people writing about geology, mineralogy, chemistry, mathematics, &c., and what does it all amount to? Not one of the writers has told us where or under what circumstances we may find a profitable mine, and so prevent the waste of capital, such as has been the result of several years past (and at which there is no reason for surprise). I believe most people will be ready to admit that the manager who has discovered a good mine, and given the shareholders 100,000s. or more in dividends on a comparatively small outlay, must be an able manager. Well, then, let us go back some 30 years, and look at the many flourishing mines in the county of Cornwall. Who managed them? Were they miners or were they schoolboys? Were they practical men or men of theory? I am not going to say a word against the latter when properly applied, and as for chemistry, mathematics, &c., they are all very good in their places.
I believe it is understood that a practical miner has a general knowledge of mining in its various branches. He knows mineral veins or lodes, cross-courses and elvans, junctions and intersections, bearings and underlies, slides, heaves, strata, and sundry other attendants, all of which, when taken into consideration and the circumstances under which they occur, enable the practical man to judge as to the probability of opening a profitable mine or otherwise. I say that the practical miner knows this from experience, while it is only known to the man of theory by name; also, a good miner knows tin ore, copper ore, lead ore, or any other ore on which it has been his practice to operate, whether of high or low percentage, as a rule, by merely looking at it. He also knows the nature of ground, the working of machinery, &c., also the handling and spending of money, and whether in mining materials or labour; in short, the general conduct to be a practical miner, and with such I see no very great need of the theory so much spoken of.

We will again look at the miners of 20, 30, and 40 years since. They, in most instances, had good mines—who were they, and whence did they come? Were they brought up at Mining Schools? Did they learn mineralogy, geology, &c., from books? Would they have known, if asked, in their days, what the things now so much talked of as essentials in mining meant? I think not; their knowledge of mining came out of the mine. Generally speaking our old managers had but an ordinary education at reading, writing, and arithmetic; some of them could not even write their names. Notwithstanding, they were good miners, and able by their practical knowledge to explore the bowels of the earth in such a manner as to yield hundreds of thousands of profit to the companies they served. Such men, although we admit the disadvantage of no education (having to trust to others in this respect) are, in my opinion, something more than one-legged

men; or, if they must have the name, let the mine adventurer seek out the one-legged man again. One leg is better than none at all. The men so strongly recommended in the Journal have done nothing the last twenty years, or since the time of their birth, or if so, what have they done? Have they discovered a profitable mine? I think not; but on looking around me I see a number of old mines which our fathers profitably worked, and which have since been re-worked by experience of the last 20 years will explain. The facts are that under depth, and as long as could be at a profit, which after being abandoned for some years, people thinking themselves better miners made a fresh start, laid out immense sums of money, and found after all that the old Cornish practical miners were no such fools as was nothing left but the nests and shells for the pains and expenditure of hundreds of thousands of pounds.

I cannot admit for a moment that the thorough practical miner, such as I have referred to, is a one-legged miner. I contend that he has two legs, sound and good, and that the other, if a man at all, is associated, with what some call a practical man. There are such people more miners when they leave off than when they commenced. They would like to be considered somebody, and finding themselves not school, read books, talk of science, &c., and get hold of a little of the gift of the gab, and these, practiced on the speculating public, who really know nothing of the man's qualities, give him a start, and nately you will here discover that this man has two diseased legs, of theory to render him some support, but after all he finds himself a cripple.

Having referred to unsuccessful mining, let us consider what can we do to improve it, and to this I would at once reply let us follow the example, as miners, of our forefathers—make fresh discoveries, work new ground, prove untried lodes, explore shallow and inexpensive mines. This was what the old miner did, and the way all the good mines were first discovered. Notwithstanding our old mining districts are extensively worked, not a tithe of Cornwall and lodes of the most promising appearance discovered, and remain unwrought. Many of them are as fine looking lodes as a miner would wish to see to start with, yet they are but little noticed by mine adventurers, for the reason it must adjourn some other good mine; there must be a profitable lode to commence, or at least so reported, but old mines, &c., and as I have before stated, the result has been insufficient to prove half a score such properties as I recommend, and I think there need be no doubt as to finding at least two in ten well-brighter appearance. There are many lodes which the outlay of a few hundreds of pounds would test, and on which there is every prospect of meeting with abundant success. I say again, go and mine science except that of using the miners' tools and the keen, as they termed it in the lode country, &c., as their guide to profitable results. There is no particular necessity in this country that a miner should be an assayer, as if he is well acquainted with ore, the article he is in search of, he can get any number of samples tested at any time by professionals, and with little cost. It is very good in a manager, if he does understand chemistry, and other branches named, belonging to the man of theory, but I say a manager can better employ him in the working of a mine than by attending to those secondary things while there are others always at hand to do it.

Before concluding I would like to say a word or two about the present so-called low price of tin and copper. I can remember when, I believe, the principal tin mines in Cornwall worked with the price of tin about 40s. per ton, or 10s. below the present price. Those mines, &c., yielded hundreds of thousands of pounds profit, and with the low price of tin before named. Then the question may be very naturally asked by those unacquainted why have we no better paying mines now, &c. For the very reason I have before mentioned. People are grappling with old, deep, poor, and expensive mines, instead of trying to discover new, which, with similar discoveries in the past, improved mining machinery and tools, and the difference in the working of a deep and shallow mine, would once more tell men seem to have no spirit to go after it. The old copper mines are being done in a miner-like manner, and we should hear but little about the low price of minerals, bad management, &c.
Perranuthnoe, April 20.
R. R.

MINE AGENTS' REPORTS.

SIR.—There was a letter in the Journal a fortnight ago from "A Holder of 400 Shares," complaining of the incorrectness of the pre-returns would be made, and stating that the inaccuracy of their pre-returns might be most desirable in the interests of legitimate mining. It is quite certain that no class adds so much to the trouble of mining agents as small speculators who look for immediate returns. If probable that mine agents might be relieved from the annoyance of even under present circumstances, fortnightly or monthly reports ought to be sufficiently satisfactory to the shareholders. Surely, mining companies in the Shropshire district were companies of a Stock Exchange, but made fortunes out of legitimate mining. Of these the Snailbeach is the only one remaining that has lasted for a century. The Ladywell, of which your correspondent spoke, was started on a somewhat similar basis; only a few shares have changed hands. Companies of large shareholders, in lead mines as well as in tin mining, and it must be often a matter of regret that the Exchange has circulated shares in some mines amongst too many hands.
April 20.
A HOLDER OF MORE THAN 400 SHARES
IN LADYWELL AND ROMAN GRAVELS.

ST. PATRICK MINE.

SIR.—I noticed a letter on the Halkyn and Holywell district mines, at page 400 in the Mining Journal of last week. Five mines are here referred to—Prince Patrick, South Prince Patrick, St. Patrick, Grosvenor Mine, and West Milwr. In the case of St. Patrick Mine a remarkable fact or two may be brought to public notice. The capital of the company will not exceed 6500s., this being drained by fissures, the absolute saving of expenses is very great; in fact, a piece of good fortune. One of the peculiarities of this for breaking the ore. At 10s. per ton the ore can be prepared for of a hammer. It may be stated in plain words that all the lead out, and a royalty of 1s. per ton, less the expense of digging it success of the surrounding properties, and the fact of obtaining this mine (St. Patrick) under such unusually favourable circumstances, it is a matter of considerable surprise. Already the shaft is cross-cut 60 fms. deep will be driven direct to the known rich lodes above on every side. The area of the property is very considerable. Instantly the lead is struck the property becomes of great value, and is capable of returning 50 per cent. dividends on so small an amount of capital. The lease of this mine has fallen into

the hands of the present proprietors, who are well able to appreciate and comprehend their good fortune. It is expected that after the level has been commenced to be driven from the bottom of the shaft. The mine being close to the large smelting works on the River Dee, the smelters pay their own carriage from the mine after sale of ore by public auction at Holywell. SHAREHOLDER.
April 20.

LEAD MINING IN GLOUCESTERSHIRE.

SIR.—I had little notion when I sent you my suggestion of the limestone district of this county being worth exploring for the sake of its lead, &c., that so early a response would have been made. I trust that now your "Yate" correspondent has so liberally indicated his desire to afford those with means to try the locality that there will not be wanting some moneyed and practical man to thoroughly prove the question. I have no doubt but that small capitalists under good management, and price of shares not placed higher than 1s. each, payable over some 12 months. Possibly much less capital would show results (that are often held looming in the distance as would prove equal to the best of mines that have, and may yet again, turned out so profitable to the proprietors of well-known properties in other parts of the island. It is certainly singular, attention has not hitherto been given to the carboniferous district of this part of England. Let us hope that his liberal offer will have its due effect upon the credulous in mining. I wish I could personally avail myself of the offer, but want of means and experience forbid. I must leave the matter for the prompt consideration of those of your readers more favourably circumstanced.
EXCURSIONIST.

PRINCE OF WALES MINE.

SIR.—If your correspondent "Copper" is really a shareholder in the Prince of Wales Mine, he must know—
1.—That the committee did not "in its wisdom" abandon the deeper levels; but were compelled to stop them, owing to the impossibility of keeping the water.
2.—The desirability of having a larger engine has been on several occasions brought before the meetings, but the times have been considered inauspicious for it.

3.—It is wrong to say that the silver was worked against the advice of the agent, and at great cost. It was worked on the recommendation of the agents, at little cost, and silver was sold to the extent of 1066s. 3s. 1d.
4.—The "spasm" about tin, and the heavy expenditure caused by it, was forced upon the committee by a general meeting of shareholders, and against the strong advice of the Chairman and secretary.
5.—Arsenic mundic is laid open in the mine, can be worked dry, requires no capital, and may result, as the committee have reason to expect, in good profits and the ultimate discovery of copper; if it be true, as generally supposed, that "mundic rides a good horse."

ONE OF THE COMMITTEE.

WHEEL CREBOR MEETING.

SIR.—In reply to a letter which appeared in last week's Journal from Capt. John Goldsworthy respecting the 75 east, I beg to say I more likely to be well informed on the subject I beg to modify it to his views. With regard to his second remark, our then respected secretary—Mr. Jehu Hitchins—did inform me that Capt. Goldsworthy had seen Mr. Martin, the Duke's agent, on the subject of the extension of the boundary, and received favourable replies, but as the matter did not then press it was not urged.
I must add that it came on me by surprise to learn afterwards that we had in the 72 east approached so near to the boundary as within 5 fms.
April 20.
THE CHAIRMAN OF THE MEETING.

GREAT LAXEY MINING COMPANY.

SIR.—Have the goodness to allow me to point out some slight inaccuracy in your report of the Great Laxeay Company's meeting, which took place on Wednesday last. I certainly did either move, or second, a proposition as to the remuneration of the directors, but it was at the request of the Chairman, and merely to raise the discussion on the subject at a future meeting. I expressly stated that in doing so I must not be understood as supporting the motion, and if I did not vote against it, I should, at least, remain neutral.
April 21.
EDW. LAMBERT.

GREAT LAXEY MINING COMPANY.

SIR.—We notice with interest in the Supplement to last week's Journal the Chairman's remarks to his brother shareholders at the half-yearly general meeting, explaining to them the improved state of the mine and increased profits to the company since a change in the management. Capt. James Polglase was not long in the company's service before the Chairman wisely intimated to his brother-directors the necessity of a change in the management, and fore-shadowed to them a grand future in the mine by so doing. Capt. Polglase was succeeded by Capt. John Cornish.

MINE ADVENTURERS.

VAN CONSOLS.

SIR.—As a shareholder in this mine, I am quite at a loss to understand the low quotation of the shares (about par). Van Consols never looked so promising as at this time, with a magnificent lode daily developing in character with that of the great Van itself. The shares of Van Consols 18 months ago were (with less brilliant prospects than now) at more than double the present price. I have within a month been over the mine, and inspected it, through the kindness of Capt. Roach. I was astonished at the mass of lead on the surface supplied daily, and the regularity of all departments reflects the same remark I began this letter I repeat on closing, that the low price of the shares is not in common justice to the mine, or its present great value and development, and if anyone is better informed than myself (after ocular demonstration of what I write) I should be glad of explanation.
CLARENCE.

TYLLWYD MINE.

SIR.—For making a simple enquiry whether there was any ore to value in the rise, as well as in the winze, which was justified by the fact of the agent never having previously omitted to value every possible point in the mine, and which could have been plainly answered in a few words, I appear to have raised quite a storm in a teapot. I did not, however, expect to run the risk of being over-whelmed by such an avalanche of talent as assailed me in last week's Mining Journal. However, although the mumbing resembles distant thunder, I do not think I am in any danger, and I expect the avalanche will shatter itself harmlessly so far as I am concerned. I think the shareholders are indebted to me for obtaining a report from Capt. John Paul, which I sincerely hope he will never regret having written. Mr. Absalom Francis is very hard upon me, and at a future time attempt to discuss the value of the mine, and I will ignorance of mining; so I suppose I am greatly to be pitied, but "When I am in his childish delight. There is only one point in Mr. D. Forrest's letter which I consider of notice, and which I consider worthy of the attention and command for about 900 tons of ore," and that "monthly sales of ore will commence next month;" and also, that "Capt. Paul has been requested to begin with small ore for the following reasons. In the prospectus it was estimated that there was the value of 4000s. at surface. Capt. Paul calculates in his report that the ore already at surface can be the more cheaply dressed, so that its actual amount could be ascertained, and the truth of the statements contained in the prospectus thereby confirmed. Some practical miners doubt if it will fetch the agents who have thus valued it in their own justification. If correct, this ore at surface ought alone to return upwards of 20 tons per month for 12 months, which would pay a decent dividend; but if the dressing machinery is extensive and efficient I can see no reason (including the 900 tons stated to have been laid

open) why the company should not commence with 100 tons a month. Such an achievement would in one year return to the shareholders their only two over, and leave the result of 12 months explorations to provide for dividends in the following year. I think I am right in asserting that the shareholders desire early profits rather than that the mine should be worked for permanent agencies. I may mention that at the meeting held in July, 1873, the Chairman (Captain Hamilton) stated "the halvans are grass grown," whatever that may mean, "and their value has been estimated at 4000l." While at the meeting, held in December, 1874, in reply to a question as to the amount of dressed ore he expected to commence with, Capt. Hamilton replied, "We shall be able to dress 20 tons a month." Now after 16 months additional working, with results reported to have exceeded expectation, I think some explanation is required for the advisability of commencing with small sales. In conclusion, I do not think that he alive Capt. Matthew Francis would feel flattered by the assertion of his brother that the had left at surface ore to the value of 4000l. C. E. W.

ADVANTAGES OF A MINERS' ASSOCIATION.

SIR,—Some weeks ago, at the Camborne Agricultural Exchange, I hinted at the advantages of a miners' association, and you were kind enough to circulate my remarks in your Paper, but I am left to the inference that the idea of such an organisation is not agreeable, or not entertained by the mining community, as no one has responded, or exchanged an idea on the subject. However, this reticence on the part of my neighbours does not in the least move me from my conviction of the importance of the project; in fact, reasons daily increase for the suggestions I made at the meeting to be acted on. The thickening cloud of adverse pressure clearly echoes the importance of combined order, effort, and action. We need the wisdom and strength of combination, the resource of counsel, to meet opposing forces. The caprice of isolated individual effort can give no relief to the situation in which mining is placed, but let the philosophy of each individual be put into the testing crucible of free investigation, then the result may be a healthy issue of plan that will serve us. If party difference, personal dislikes, and scientific jealousies could be suppressed in the interest of our great Cornish enterprise, and unity of action secured and deliberative plan acted on, then the opposing forces of mining can be successfully combated; and, though our great enterprise is regarded by many to be drifting into the shadow of its doom, yet the cloud is not without a rent, and if Cornishmen would adopt their motto, "One and All," we should ere long be free from the crushing ills which now bedevil us.

The foreign market, which now threatens up with extinction of a living rate of revenue, can be completed with by Cornish mines successfully. Victory will attend our honest and united action. The dangers now to mining are many and great, and the foreign market, though great, is not the greatest difficulty. There are homebred conditions to be met, which are hampering and strangling our energies, and how best to meet these conditions is a problem for an association of the executive. It is clear, however, that a great deal of shipshod style must be thrown aside, and rule of thumb discarded for a more scientific method. These are the two watchwords if Cornish mining is to readjust itself—efficiency and economy. What is efficiency? or what economy? The course of economy to one man is sheer destruction in the esteem of another. Yet there is a scientific right way. Let the association aid in this analysis, and give authority to truth. Efficiency in machinery—is it cheaper to procure, at an increased outlay, new and improved principles, or to obtain at a less sum well-worn second-hand engines? Do cheapness and efficiency go together? If not, which serves the adventurer best—the cheap or efficient? Is not the most efficient the cheapest at any price? These are important considerations for mining, as well as the method of raising and dressing ores, and should receive a determining note from an association of presumed authority. Efficiency and economy would treat the troubled question of merchants, markets of supply and disposal, coal, timber, iron, and other matters, which now form no small question of difficulty to the struggling miners.

A revision of their method and a uniform plan of action would be work for a miners' association. Mines struggling in the grip of exacting merchants should be aided to a free market, and miners who are weak enough to jolt the market by stocking tin to fight the smelters, and borrow money of smelters to do so, should be corrected and turned from the error of their ways. Economy and efficiency! It is not economy to reduce the labourer's wages to starvation point; too much economy has been aimed at in this direction already. If we would have the energy of our men they must be fed, or they will rise in a foreign field to oppose us. It is not economy for adventurers to grasp the utmost farthing in dividends, and thus appropriate money that should be employed in the development of the mine; nor is it economy in the merchant to exact exorbitant prices for his wares, and in his avaricious attempt cut short the life of the goose that would lay golden eggs. Rather should there be a combination to aim at perpetuity in our mining operations. It is efficiency and economy to elect for the most practical and practical miners, but men whose knowledge of mineralogy does not go beyond the depth of a subsoil plough? And, though last not least, is it economy in the lords to exact the last shilling for dues or ground accommodation, and thus straiten the efforts of a struggling mine? Would it not rather be economy for them to encourage the development of the mines and give a permanence to their property, otherwise revenue from dues must not only cease, but populous villages and towns which have sprung into life with mining must collapse with mining.

It is not without an alarm, but it is clear to all that mining is passing through a crisis, and it now depends on united energy and revivifying reform whether this shall prove a mere transition state to prosperity, or the prelude to a wreck and final disaster.

WM. TEAGUE, JUN.

SOUTH FRANCES MINE.

SIR,—Readers of your valuable Journal generally derive profit or amusement from perusing the letters of your respective correspondents, but that from Mr. R. Goldworthy partakes much of what is called in Cornwall a "conglomerate," wordy and contradictory to an extent that no dressing machinery can subject the base metal to intelligible reasoning. Capt. Goldworthy was invited to inspect South Frances Mine for a London shareholder; he complied with that request. What did he do? He went down the mine and through the levels, but neither went into a pitch or saw a stope, and, therefore, could take no samples. Probably he exercised a wise precaution in refraining from encumbering his pockets with tinstone, the worth of which he was capable of valuing unseen as seen when that involved assaying the tinstone. Capt. Goldworthy accepted the agent's valuations, and even the agent's plan for a mine, and sent them to London as his own. Query: does Capt. Goldworthy really know anything about tin mining? His experience at North Roskear for a long 12 months might have taught him much had he devoted his time to the mine. Capt. Goldworthy recommended stopping certain stopes and pitches which were making profits and opening ground, and had he known and thought for a moment that rich bunches and squats of rich tin stuff are frequently met with by tributaries in pitches or in stopping, so that it is advisable to encourage such miners when you can do it without actual loss. Capt. Goldworthy uncouthly inclines that the agents, for want of scientific knowledge, do not know where to find the West Basset lode. * * * Capt. Goldworthy has his work to do at South Ward; let him attend to it, and like the smiths at South Frances, be at his post even to 16 hours a day if required.—April 22.

MINER.

MINING IN COMBARTON, NORTH DEVON.

SIR,—It is gratifying to be in a position to say a few satisfactory words on the district of the well-known Old Combarton neighbourhood, whose mines when last worked were so productive in lead and silver ores. Although the country has been neglected for so long there are now hopes that older and brighter days will soon again return. Several attempts from time to time have been made to develop the untold riches, but for want of capital the undertaking soon dropped to ground, and, as I may say, the money spent is lost unless the mines are properly maintained. At length a Capt. Samuel Mitchell, late of the Bampfylde Mine, came here, and appears has gone into mining in real earnest, and there is every probability of his being rewarded for his energy—not to say a word of the discoveries made in the south part of the property, but the lode that has come to my notice is one that he has discovered in Girth Valley, and south-east of West Chalcombe estate; the lode appears so far as seen to be 5 ft. wide, producing excellent lead ore, and, in my opinion, travels the length of West Chalcombe Mining Property; this lode can be out in this property by driving another 10 fathoms at a depth of 60 feet from surface.—April 22.

JOHN TREWEEK.

MARKET VALLEY MINE.

SIR,—I should esteem it a favour if you could find space in your valuable Journal for a remark or two on this mine. At the meeting at Salisbury, on the 12th inst., a call of 2s. per share was made, in consequence of four months' expenses being charged (at the end of the year) against three months' returns. The driving of the 30 ft. level, on Rosedown, where the lode is large, promises much, already being worth 2 tons per fathom. Some ten years since I was a holder of 100 shares in this mine, at a price close on 5l. per share. On looking at the stopes, I see no reason to doubt a very early resumption of dividends. The stopes are very rich indeed, and yet the shares are but 1l. at this present time. I note only a few of them:—The 124, on Marke's lode, is thus—two stopes, worth together 5 tons copper. The 100, on same lode, worth for one stope 3 tons copper per fathom. The 80, on Rosedown, worth for four stopes 23 tons copper together per fathom. The 60, on ditto, two stopes worth together 10 tons copper per fathom. The 30, on ditto, two stopes worth together 9 tons copper per fathom. Out of a sample of copper in the tank 44½ oz. of silver per ton was found from a sample taken. More of this matter hereafter will be brought to public notice.

AN OLD SHAREHOLDER.

THE CHANNEL TUNNEL.

SIR,—Is it not a little extraordinary that so many people, foreseeing the difficulty that will be experienced should this projected tunnel be accomplished, in ventilating it in the face of steam locomotives, should be floundering about in search of new motive power when they have ready means at hand, involving no necessity for any new invention whatever? There must be many railway engineers alive who remember the atmospheric system introduced on the South Devon Railway, the chief and, I believe, the only objection against which was the prejudicial effect on the continuous valve by the frequent and rapid changes of temperature consequent on working in the open air. This difficulty will never be experienced in the Channel Tunnel, where the temperature will of necessity be tolerably uniform, and may be kept perfectly so without any difficulty whatever, rendering this means of locomotion most perfect and suitable for tunnel work. I believe that it is admitted on all sides that—

get rid of steam locomotives—there will be no difficulty in ventilating. Let us, then, hear no more of anticipated difficulties of ventilation, which by proper arrangement need never be experienced.

April 22.

W. TREGAY.

[For remainder of Original Correspondence, see to-day's Journal.]

Meetings of Public Companies.

GAULEY KANAWHA COAL COMPANY.

An interim meeting of shareholders was held at the offices, Queen Victoria-street, on Thursday.—Prof. ANSTED in the chair.

Mr. A. STEUART (secretary) read the notice convening the meeting. The CHAIRMAN said that the shareholders had been convened in accordance with the resolution passed at the last meeting. He was absent at the time, and had been until within the last few days, but having returned he was very anxious to have the advantage of meeting the shareholders, although it could not be said there had been very much progress made in the affairs, with respect to which Dr. Troncher, who had represented him in his absence, would be able to give every information required. The directors were not in a position to submit any regular statement of the affairs, but hope to do so soon. They had some difficulty in placing a sufficient number of shares to provide all the money likely to be wanted to carry the thing to a successful issue, but that difficulty had now been overcome, and the rails shipped and fairly on their way to America. Of course no real result could possibly take place until the rails had arrived and were laid down, and the work fairly commenced in carrying coal to market and selling it. Everything was progressing as well as it possibly could, and there had not been, nor was their likely to be, any check. The money paid for the rails and all expenses had been provided, and the balance here and in America would no doubt be sufficient to complete all at present in hand. The season was favourable, and everything ready to commence work, and he hoped they would soon be able to announce a definite result. Their manager told them that he could now return 30 tons per day, and would in a very short time be able to increase it to 100 tons per day, and if they could sell only that quantity at anything like the profit everybody was making, and always had been making, each shareholder in the company would have sufficient reason to be perfectly satisfied with the result.

Mr. E. J. WILSON said he had been instrumental in causing the present meeting to be held, and had no doubt the majority of the shareholders regarded it as advantageous that the meetings should be held half-yearly. Circulars did not give shareholders the same amount of information as was obtained by a personal interview. Upon this occasion the Chairman had presented a very satisfactory statement, and the meeting had been called to order. The Chairman did not have had any accounts for the six months. The statement just made was a most cheering one—that is, that they had the means to complete the works, and they had always been told that means only were required to return a good profit. The accounts were remarkably satisfactory—the outlay had not been large because there had not been much done, and the balance was between 9000l. and 10,000l., so that they were in a very satisfactory position.

Mr. STEUART, in reply to a question, stated that the first shipment of rails left on April 5, and the second on April 20; everything had been paid for, and the balance in London was 3000l.

The CHAIRMAN, in reply to a question, stated that when in America he enquired into the lumber trade, and he found that very large profits were made by those who could afford to hold, but ruined everybody who could not. The trade had suffered much since the commercial depression in America, but that would be sure to improve in due time. They held a valuable stock which would, no doubt, be the means of yielding a large profit.

Dr. TROUCHER (a director), referring to the increasing value of the land in the district of the company's property, mentioned that the latest purchase of land in the district—on the other side of the river, where land was far inferior to that belonging to the company—had realised 833 in cash, whereas the company paid only 816—one-half cash and one-half in paid-up shares; and Mr. Nuttall (a private gentleman) had written to say that he had given 12,000l. for a bituminous coal property because he believed in the bituminous coal possessed by this company—the 11-ft. seam. Mr. Nuttall was a gentleman of considerable experience, and had been in the coal trade all his life.

Mr. STEUART read the last report from Mr. Trotter, which was as follows:—
March 8.—In accordance with a letter I received from the secretary, dated Feb. 15, received here March 4, instructing me to make a full report on the condition of the railway, miners' huts, houses, &c., on your property, I beg to submit to you the following statement. Since I made my last report to you, in July, 1874, the following work has been done and money expended:—Lands: You have made a most valuable addition to the property of the company by the purchase of the Westlake estate, comprising 316½ acres (including the 50 acres), sold to the company by Prof. Ansted. There are three log cabins, value 41l., and two houses, including a farmhouse and out-houses, value about 163l., on the property—120 acres of the land have been under cultivation. I have leased this land on the usual terms in this part of the country—for one-third of the entire produce raised, after it has been harvested, which on an average year will amount to 40l. for the first year, 60l. for the second, and 80l. for the third year. This will be a great saving to the company, as they have always had to pay a high price for fodder for their animals, especially during the winter months. For instance, the company sometimes have to pay as high as 8l. per bushel for corn, and if the value of the third part of the produce—the straw—paid for the farm was estimated as high as the company have paid for fodder, the amount would amount to almost double what I have stated the rent to be. The land adjoins that of Colonel Tyree—he is selling, and has sold, building lots as high as 40l. per acre. I have had frequent applications for building lots, and only await the instructions of the board to make sales. The company can offer sites for building in far more eligible situations than Col. Tyree can give. The land cost the company 900l., a little under 3l. per acre. As stated above, I have leased a little over one-third of the property at the rate of 60l. a year, which will return an interest of about 10 per cent. on the whole purchase. The company have all rights over the remainder of the estate, which is well wooded, so that the company, when they require to erect additional houses, will not be put to the expense of buying timber, which in the neighbourhood is daily increasing in value for building purposes, and becoming more scarce. The whole of the company's buildings are on this property.—Railway: The contractor completed the grading of the road, as I mentioned in my last report, but did not finally withdraw all his hands until August, leaving the line clear of slides, and ready for the ballasting, sleepers, and rails. The sum expended on the works to June 30 was 4100l., since then the contractor has received 2500l.—In all 6600l. There still remains due to the contractor 900l.; nearly 300l. of this sum is due on account of interest and low costs. I, therefore, understate the amount due to the contractor a little over 1000l. In my last report.—Chesapeake and Ohio Railroad Switch: The embankment has been widened sufficiently to lay a double track 600 ft. in length—one line for loaded wagons, and the other for empty ones between the coal bins and the switch leading to the main line of railway. Total cost, 3500l. The entire line of railway—leading to the Chesapeake and Ohio Railroad switch, has been ballasted to the depth of 6 in., at the rate of 75 per cubic yard. Total cost, 386l. The sleepers have been cut and distributed along the line of railway, and the sawn sleepers for the trestle work and bridge are placed ready to receive the rails. Total cost, 546l.—Colliery: No work has been done in the mine since May 14, 1874. The sum of 83l. has been expended in preparing timber for the coal bin, and in digging the foundations. The 11-ft. seam of coal which we have been working has been proved in different places round the mountain, and the dip of the coal found to be north 84°, west 16° 10' to 100 cubic feet, or 84 4-10 per mile, verifying the statement made by Prof. Ansted that the coal would incline upwards in going in. There is, therefore, a natural outlet for any water that may collect in the mine, obviating the use of all machinery for pumping. We could at present deliver 30 tons of coal per day, and with an additional outlay of 100l. could put 100 tons of coal per day into the market. This would not be all dead work, as the coal mined would add to our present stock, or be sent to market on the completion of the railroad. In one of the openings on the mountain made to prove the dip of the coal, about 20 ft. from the surface of the mountain, the lower part of the 11-ft. seam was found to be 9 ft. of solid coal, with no parting. I am constantly receiving applications from coal agents and others for our coal, samples of which I have sent to Richmond and New York, large samples, which have been well distributed; and amongst men of long standing in the coal trade there seems to be only one opinion, that our bituminous coal is superior to any other that has yet been placed on the market. The facilities for mining the coal cheaply, compared to other coal mines, can hardly be exaggerated. Gentlemen who have visited the coal mines lately told me that they hardly would have believed the facility with which the coal can be mined if they had not seen it themselves. Prof. Ansted has secured for this company the only (practicable) outlet on to the main line of railway for this thick seam of bituminous coal. The valuable seams of splint and cannel coal lie about it, from 100 to 700 ft. higher up the mountain, can be mined with the same facilities. Large ironworks are being erected at Iron-ton, 18 miles from Huntington, and 98 miles from here; they are wholly dependent on coal from this valley, and, as I was informed, are only waiting for the completion of our works to make contracts for coal or coke. Some of the furnaces have been erected on a new patent, to coke their own coal in the furnace and utilise the gas from the coal—they will use bituminous coal.

Buildings: No new buildings have been erected since last July. The log houses have been re-plastered with mud during the winter. The bank houses have been whitewashed and fenced in, and other repairs done, at a cost of 100l. The three log cabins and one of the houses on the Westlake estate will accommodate a considerable number of workmen.—Lumber (Gauley): Since last July 983l. have been expended in this business, 339l. from receipts of lumber sold, 236l. cash paid out, and 417l. debts still owing; total, 983l. Owing to the unprecedented fall in the price of lumber, which at this present time is not worth more than a third of what it was last year, I have suspended the works for the present. No work has been done on the Gauley since the end of October, 1874. With respect to this business the company are in the same situation as hundreds of other men engaged in the lumber trade; they have a stock of lumber and staves on hand which cannot be sold till prices rise again. Prices are gradually improving, and owners of neighbouring properties engaged in the lumber trade confidently expect by next June that prices of lumber and staves will again be about the same as they were last year. The present value of the plant, roads, houses, stock of lumber and staves, will amount to 800l. In no previous year have such losses been incurred amongst men engaged in the lumber trade as there were last year. The following statement shows the expenditure to July 1, 1874, and the amount expended since that date to Feb. 28, 1875. I have thought it advisable to retain the same headings of expenditure as in my last report.—Expended up to July 1, 1874, 4100l.; colliery, 900l.; buildings, plant, &c., 1842l.; roads, 200l.; general expenses, 1307l.;

lumber (Gauley), 1049l.; stores, 175l.; land, 3228l.; law expenses, 101l.; total, 12,902l.—Expended since then up to Feb. 28, 1875: Railway, 4511l.; colliery, 83l.; buildings, plant, &c., 100l.; general expenses, 200l.; lumber (Gauley), 983l.; total, 5577l. In my last report I stated that for the sum of 11,400l. the property would be made immediately available. Since then 5377l. have been expended. I beg to submit that for a further sum of 6323l. your coal can be placed on the main line of railway, and the property of the company made available, with a gradually increasing demand for your coal when its properties become more generally known, a large return on your capital will be secured. I have omitted to mention the source of no inconsiderable profit to the company on the completion of their railway. The distance from Hawk's Nest to the company's store on the turnpike road is a little over two miles. The present rate charged for hauling freight is 20 cents per 100 lbs.—about 18s. a ton. At half that rate, as I have mentioned before, there is no opening in the mountains to the south of line of railway, except at Hawk's Nest, and the country for 30 miles north of this line of railway, except at Hawk's Nest, and take the produce to that station. I have no data as yet to go by, but at the rate of 20 tons a day the freight would amount to 9v. per day, and the additional cost to the company would not exceed 400l. a wagon and 8200 for a shed to put the goods in; total, 52l. If we carried freight at that rate for 200 days in the year it would amount to 1800l.—J. S. THORNTON.

The CHAIRMAN said that report was a most satisfactory one. Mr. LETCHWORTH asked when the directors would be in a position to declare a dividend?—The CHAIRMAN said they must first of all be in a position to declare a coal to market, and in order to do that they must have a road; they had been contract for starting the railway. It was a very difficult line indeed to construct, but they had made the best of it. There were few instances in the whole world where a railway had been constructed upon an incline of 1 in 18 for three miles without a single bad curve, and with only one short tunnel of about 30 yards. He did not believe that in any part of the world coal could be got more easily. The mine had been sufficiently open to start, and the manager was going to open a seam of cannel coal—a valuable seam. That, however, would cost a doubtful sum, and he (the Chairman) thought that until they saw their way with regard to the bituminous coal they would be wise to wait, and then the cannel coal would follow, which it must do. The cannel was considerably above the bituminous, for the mine must do. The cannel was considerably above the bituminous, for the mine must do. The cannel was considerably above the bituminous, for the mine must do.

Mr. SMITH asked if there was any danger of crashing it?—The CHAIRMAN said they were arranging for their walls to be quite wide enough to give any support. It is harder than most Yorkshire coal.

Mr. WILMSHURST asked if freehold property in Virginia was secure? A DIRECTOR said there was a law in Virginia which enabled foreigners to hold freehold property—a law which did not extend to any other State.

The CHAIRMAN, in reply to a question, said there was no reason why the mine could not be laid down in a month from the time of their arrival. He did not think it possible that they should be selling coal before the time of the next meeting; of course, it would take some little time to get a road to Richmond, and ship it from thence to New York, or some of the other ports. He supposed that by July or the middle of August they ought to be receiving money for the coal sold, and this capital was so small that a very small trade indeed would be sufficient to make a source of some profit; and if they put a little money into the store, that was a safe return of 30 per cent.

Dr. TROUCHER said that by placing their own trucks on the Chesapeake and Ohio Railway there would be a difference in carriage to the percentage upon the cost of something like 40 per cent. In favour of the company; that, however, was a matter for future consideration.

The CHAIRMAN said the coal would be tipped from the company's trucks (and screened) into those of the Chesapeake line. There was sufficient money in hand to carry them through and place them fairly in the market. Dr. TROUCHER said there would be no objection to issue a few more preference shares at par, although it had been thought some little time since not to issue more, except at a premium.

Mr. LETCHWORTH begged to propose a vote of thanks to the Chairman. From the first he had a great deal of confidence in the statements of the Chairman, and he had never found any reason to diminish that confidence. He had been very pleased they had so able a chairman.—Mr. WILMSHURST seconded the proposition, which was put and carried unanimously.

The CHAIRMAN thanked the proprietors for their renewed mark of confidence. He was sorry he had been unable to attend to the company's affairs during the past year, although it had so happened his services had not been greatly needed, for the future he hoped to be able to keep things going, and he had no doubt they would soon be in a more satisfactory, or at any rate a more positive, position than at the present time.—The meeting then separated.

UTAH SILVER-LEAD MINING COMPANY.

An extraordinary general meeting of the shareholders was held, on Wednesday, at the offices, Austinfriars.

Mr. G. BATTERS in the chair.

The meeting was called "to consider the present position of the company."

The notice calling the meeting was read by Mr. W. J. Lavington, the secretary.

The CHAIRMAN, in opening the proceedings, said the directors had convened the present meeting in order to give an account of their stewardship since the last meeting, held on Nov. 10. There had been very little done at the mines, and the experience of the company during that period had been one of continued misery and misfortune, showing the utter impossibility of honestly conducting business in Utah, and the folly they had committed in entrusting their money in any such place, and in any such hands as the shareholders had fallen into in common with other companies similarly situated. Mr. Longmaid continued in the company's service until a recent date, when he left, stating that there was no ore in the mine, and that, too, after he had himself put up extensive machinery for dressing the galena ore which, according to Mr. Longmaid's report, and the report of other persons, was to be found in abundance in the mine. The only thing which appeared left for the managers in Utah to do was to lease the works (not the mine) for the winter months, and in the end it was leased for a small sum, the idea being that the machinery would be better at work than if allowed to remain idle. Unfortunately, the lessee appeared to have scarcely got possession of the machinery than he also took possession of the mine; and instead of there being no ore to work, the directors were informed that the lessee had extracted upwards of 2000 tons out of the mine, and he had sold it on his own account. This gentleman seemed to have very speedily discovered that there was something worth his while to take away; anyhow, the ore had been taken away, and the directors had never been able to get any account of it. But this was simply in accordance with the experience of everybody in Utah. Letters had been received yesterday of a recent date from the solicitors whom the board had employed—Messrs. Bennett and Whitney—which would explain more fully the present position of affairs there. The financial condition of the company was pretty nearly as follows: They had 320l. at the bank; there was about 337l. which had been collected by the solicitor; there was an amount of 386l. owing from Bateman; and the only other asset was the lawsuit which had been instituted for the 2000 tons of ore extracted. On the other side there was a small amount owing to the solicitor in Utah, and they owed to Mr. Longmaid also a small amount, which had not been paid, because there were items in that account which the directors did not feel justified in passing. There was a further amount of 30l., which would have been owing to the lessee had he not taken the ore from the mine. It would thus be seen that the company was out of debt, and, in fact, had something in hand, and no expenses were being incurred at the mine beyond the expenses of a gentleman who was now in possession on behalf of the company. Finding how things were drifting, the directors had telegraphed to Mr. Argall to go up and keep possession, which would be but a small cost, and the directors thought it better that the mine should be in the hands of someone they knew, rather than in the hands of someone they knew nothing about; and the directors believed Mr. Argall to be a strictly honest and reliable man. The present meeting was held for the purpose of enabling the shareholders to consult together, and arrive at a conclusion as to what was best to be done—whether to sell the machinery and the mine or to keep on with the prospect of obtaining honest administration. The directors had telegraphed to a gentleman to go and inspect the mine, and let the shareholders know what their position was. They had indirect information that the gentleman was expected to be there about the first or second week of this month, and, therefore, it was reasonable to suppose that they would hear from him in about a fortnight from this time. Taking all the circumstances into consideration, he thought the best plan would be to adjourn the present meeting, and come to no determination as to selling at present.

A SHAREHOLDER asked the name of the gentleman who had been asked to inspect the mine.

Mr. APPELGARTE said the gentleman was Mr. W. A. Roberts.

The CHAIRMAN said there was one matter which the directors had done without of manager, and to request him to pay all balances of calls over-due, consulting the shareholders, and that was to remove Mr. Bateman from the post of manager.

Mr. LAVINGTON then read the letters which had been referred to by the Chairman. Mr. TAYLOR said he had heard that the lessee had been extracting about 300 tons a month from the mine. He understood that he was formerly a clerk to Mr. Davis. From all he had heard, he believed the mine contained good ore, and surely an honest man could be found on the face of the earth who would represent the company out there.

A discussion ensued, in the course of which Mr. Wilson referred to matters which had been referred to over and over again and disposed of, and eventually a resolution was proposed and carried to the effect that Mr. Woodfield, who will leave

APRIL 24, 1875.
A quarterly general meeting of the shareholders of the Gresham Building Society was held on Wednesday, April 22, at 10 o'clock, at the offices of the Society, 15, Abchurch Lane, London. Mr. GRANVILLE was in the chair. The CHAIRMAN said the meeting was called to consider the present position of the company. The notice calling the meeting was read by Mr. W. J. Lavington, the secretary. The CHAIRMAN, in opening the proceedings, said the directors had convened the present meeting in order to give an account of their stewardship since the last meeting, held on Nov. 10. There had been very little done at the mines, and the experience of the company during that period had been one of continued misery and misfortune, showing the utter impossibility of honestly conducting business in Utah, and the folly they had committed in entrusting their money in any such place, and in any such hands as the shareholders had fallen into in common with other companies similarly situated. Mr. Longmaid continued in the company's service until a recent date, when he left, stating that there was no ore in the mine, and that, too, after he had himself put up extensive machinery for dressing the galena ore which, according to Mr. Longmaid's report, and the report of other persons, was to be found in abundance in the mine. The only thing which appeared left for the managers in Utah to do was to lease the works (not the mine) for the winter months, and in the end it was leased for a small sum, the idea being that the machinery would be better at work than if allowed to remain idle. Unfortunately, the lessee appeared to have scarcely got possession of the machinery than he also took possession of the mine; and instead of there being no ore to work, the directors were informed that the lessee had extracted upwards of 2000 tons out of the mine, and he had sold it on his own account. This gentleman seemed to have very speedily discovered that there was something worth his while to take away; anyhow, the ore had been taken away, and the directors had never been able to get any account of it. But this was simply in accordance with the experience of everybody in Utah. Letters had been received yesterday of a recent date from the solicitors whom the board had employed—Messrs. Bennett and Whitney—which would explain more fully the present position of affairs there. The financial condition of the company was pretty nearly as follows: They had 320l. at the bank; there was about 337l. which had been collected by the solicitor; there was an amount of 386l. owing from Bateman; and the only other asset was the lawsuit which had been instituted for the 2000 tons of ore extracted. On the other side there was a small amount owing to the solicitor in Utah, and they owed to Mr. Longmaid also a small amount, which had not been paid, because there were items in that account which the directors did not feel justified in passing. There was a further amount of 30l., which would have been owing to the lessee had he not taken the ore from the mine. It would thus be seen that the company was out of debt, and, in fact, had something in hand, and no expenses were being incurred at the mine beyond the expenses of a gentleman who was now in possession on behalf of the company. Finding how things were drifting, the directors had telegraphed to Mr. Argall to go up and keep possession, which would be but a small cost, and the directors thought it better that the mine should be in the hands of someone they knew, rather than in the hands of someone they knew nothing about; and the directors believed Mr. Argall to be a strictly honest and reliable man. The present meeting was held for the purpose of enabling the shareholders to consult together, and arrive at a conclusion as to what was best to be done—whether to sell the machinery and the mine or to keep on with the prospect of obtaining honest administration. The directors had telegraphed to a gentleman to go and inspect the mine, and let the shareholders know what their position was. They had indirect information that the gentleman was expected to be there about the first or second week of this month, and, therefore, it was reasonable to suppose that they would hear from him in about a fortnight from this time. Taking all the circumstances into consideration, he thought the best plan would be to adjourn the present meeting, and come to no determination as to selling at present.

England-to-morrow to inspect the property of the Flagstaff Company, be requested to inspect the Utah Mine, provided his services could be secured for a small sum. This is in addition to the report which Mr. Roberts will send over.

A vote of thanks to the Chairman and directors closed the proceedings.

WEST CHIVERTON MINING COMPANY.

A quarterly general meeting of shareholders was held at the offices, Gresham Buildings, on Wednesday, Mr. T. SMITH in the chair.

Mr. GRANVILLE SHARP (the secretary) read the notice convening the meeting, and the minutes of the last were confirmed.

The CHAIRMAN said,—"Your committee have, in accordance with the promise made you at the last meeting, caused to be issued to each registered shareholder a printed balance-sheet, duly audited by Mr. Warwick, for the sixteen weeks ending Feb. 27, which they hope you will consider satisfactory, and a justification of your change in the management, also along with it Mr. Warwick's audit of the West Chiverton accounts for the last five years. I need not make any comment on them at present—they speak for themselves, and show the time when the false creditor balance was manufactured and continued. In moving the adoption of the balance-sheet and report now before you, I will draw attention to two or three points which your committee consider very promising for the present and future prospect of the adventurers. The working cost we have been enabled to considerably reduce. If you compare the cost of the four months previous with the present, you will find the former 5856*l.*, the present 5189*l.*, being a balance of 666*l.* in favour of the present management. We are glad to inform you (and the returns prove the correctness of our statement) that this saving has not resulted from any false economy. You will find the dressing costs for the same 559*l.* 7*s.* 10*d.*, as against 1139*l.* 18*s.* 10*d.*, but the tutwork is heavier, 1583*l.* 13*s.*, as against the sum of 1332*l.* 1*s.* 5*d.*, showing the late management had much neglected the dead work of the mine, and there is yet a great deal of time and money still to be spent before the mine can be brought back to a proper working and satisfactory position—Glubb's shaft and other necessary works, which Captain Southey will inform you of in his report. The coal question has been a very serious one to your committee, but they trust you will consider they have been able to meet it with some degree of success when they inform you that the average cost since they took office has not exceeded 18*s.* per ton, and Captain Southey will speak of the quality. We venture to think this will contrast favourably with the cost of any of the mines in the county. We are now importing a first-class steam coal at 17*s.* 6*d.* Since our last meeting Capt. Southey has built a large fenced coal yard, and paid for it out of working costs, and we have no doubt the saving effected will soon pay for the outlay. Whilst on this subject I may mention that Capt. Southey has been enabled to make a considerable reduction in the consumption of coal, amounting already (although the weather has been very unfavourable—in January the rainfall was 6 in. more the previous January) to 100 tons per month; previous monthly average, 433 tons; present, 333 tons. But I do not wish you to labour under any mistake; you must not forget there is the stoppage of the working of the stamps to take from this, which will account for 75 tons of this reduction, but still it is creditable to Capt. Southey, with the hard winter he has had to encounter, and the machinery in the condition he found it, that he has been enabled to save 25 tons per month; and we have no doubt when the machinery is put into proper repair and efficiency he will make a still further saving in the consumption. We are losing no time in pushing forward the repairs. The report from our engineer is satisfactory. All repairs are being paid out of monthly costs. Since our last meeting Capt. Southey has put down two new bundles, and paid for them out of costs. Garras wharf is let by Captain Southey for 26*l.*; the rent will now be 24*l.*, as against 85*l.* The sinking of the shaft to the 150 is being prosecuted with all dispatch, and will be completed in time of contract. I now beg to move that the balance-sheet and report be adopted.

Mr. J. J. HEARD seconded the proposition. He confirmed the statement of the Chairman as to the energy and skill of the present manager. Each member of the committee had done his best to endeavour to ensure a successful issue, and everything seemed to bear that indication.

The motion was put and carried unanimously.

Capt. SOUTHEY read the report, as follows:—

April 10.—The following is our report of this mine, showing the progress made during the past four months, together with our future prospects:—Batters' Engine-Shaft: The sinking of this shaft has fully met our expectations, and is now 10 fms. below the 140. We shall sink 6 ft. further—giving us 10 fathoms of backs clear—before cross-cutting to the south lode. We expect to have this accomplished by our setting in May, when the cross-cut will at once be proceeded with, and an other set of men engaged to case, divide, put in skip-roads, and make the shaft complete for drawing from the 150. The 140 is driven west of the cross-course 16 fms.; the lode throughout the drive is worth on an average 30*l.* per fathom. We have not stopped any ground in this direction, nor do we intend doing so until we have communicated with a winze sinking 5 fms. in advance of the present end, where the lode is worth 50*l.* per fathom, and by which time we shall be in a very favourable position for opening the 160. We have driven a cross-cut north in the 140, in the cross-course, about 6 fms., and intersected the middle lode, which is 5 ft. wide, worth 8*l.* per fathom; this has every indication of opening out a very valuable piece of ground. The 140 is driven east, on the north lode, 12 fms., and west 2 fms.; the lode in the present end is worth for lead and blende 8*l.* per fathom. In the 130 we have driven on the north lode 4 fms. west of No. 1 cross-cut, on a lode 5 ft. wide, worth for lead and blende 10*l.* per fms., also 3 fms. east on the same lode, worth 8*l.* per fathom. The 140 is driven 30 fms. east of shaft, on the south lode; for the 20 fms. driving to the 150, which is standing intact to the 130, is worth 12*l.* per fathom. Glubb's shaft: This shaft we shall commence sinking below the 130 on the completion of the lift at Batters'; this being a very important point for the development of the western grounds, no time will be lost in getting down during the summer months. We are driving a cross-cut in the 130 from this shaft, to intersect the south lode; the ground through which we are passing is very congenial for the production of minerals.—Hawkes' Engine Shaft: We have driven the 140 west of this shaft about 9 fms.; the lode is 4 ft. wide, worth for lead and blende 10*l.* per fathom, presenting a very promising appearance; and, judging from the character of the lode gone down in the 130, in advance of the present end, an early improvement may be expected here; we are also cross-cutting in this level to intersect the south lode. In the 130 we have driven a cross-cut 4 fms. south, to intersect the south lode, and have opened on its course 5 fms. east and 3 fms. west; throughout the drive the lode has varied in value from 5*l.* to 8*l.* per fathom. The end is extending in unwrought ground, and will very probably improve in value. In the 80 we are driving west on the north part of the lode; the end is driven from the shaft 9 fms., and the lode worth 12*l.* per fathom; this is quite a new feature, and there is every probability of opening out a profitable piece of ground in this direction. We have four men employed clearing the different levels which have been crushed together and left idle for many years past, and we believe by adopting this course it will be the means of laying open ground which will pay well for the outlay.—Surface Operations: A new tramroad at Glubb's shaft enables us to convey the ore direct to the dressing-rooms, thereby saving time and the expense of horse labour. Two new round buddles at the silene-floors are working admirably, and saving lead which previously escaped into the river. We have also completed the erection of a coal yard for the better protection of the coals on the mine. In conclusion, we feel highly satisfied in being in a position to present you with an increase of returns over expenditure for the past four months, a result which has been achieved in the depth of winter, and in the face of difficulties too numerous to mention, and in a state in the coming four months, judging from present appearances, our position will be considerably improved.—R. SOUTHEY, R. MANCABROW.

A SHAREHOLDER asked the aggregate value of the ends, and the present state of the machinery?—The CHAIRMAN said the machinery was in a great deal better condition than it had been; repairs were still going on, but it would be some time before entirely complete. As soon as completed a considerable saving in coal would be effected. The aggregate value of the ends and winzes was 144*l.* per fm.

Mr. SHARP, in reply to a question, stated that the labour cost had been brought up to Feb. 27, and the sales up to March 6. No ore had been credited not actually sold. Had the mine continued to be worked as under the old management, the present accounts would show a profit of 500*l.* The former management sunk the shaft 2 fms. in 2½ years, whereas under the management of Capt. Southey the shaft had been sunk 10 fms. more, and was now within 6 ft. of the 150.

A SHAREHOLDER asked if any discoveries had been made under the present management.—Capt. SOUTHEY said that in the 80, driving west on the north lode, where in new ground, the lode was worth 12*l.* per fathom, and there was every probability of opening out a profitable piece of ground in that direction.

The CHAIRMAN, on behalf of the committee, said they should be neglecting an important duty if they allowed this opportunity to pass without according to Capt. Southey the best thanks of the shareholders for the manner in which he had conducted the business of the mine. He (the Chairman) had paid several visits to the mine, and sometimes most unexpectedly, and had always found Capt. Southey doing his duty, and every man at his post. He proposed that the best thanks of the shareholders be given to Capt. Southey for the energetic and skilful manner in which he had conducted the business of the mine since being appointed manager.

Mr. HEARD having had opportunities of witnessing the energy and ability of Capt. Southey, could bear personal testimony to the correctness of all that had been stated by the Chairman. He (the Chairman) had found Capt. Southey a "true and faithful servant" of the company, diligent and conscientious. He had much pleasure in seconding the proposition, which was put and carried unanimously.

Mr. SHARP said that from the time Capt. Southey had been appointed manager he had remained there day and night from Monday morning until Saturday night.

The CHAIRMAN: I now come to the most unpleasant part of our business—to

more than a call of 20*s.* per share and is now made, payable on May 12, to the

secretary, Mr. G. Sharp, 2, Gresham Buildings, and the usual discount of 5 per

cent, be allowed for the interest. We are compelled to make the above call, but it is of the greatest

importance that your financial position be sound. Although in a much better

position than when we last met, still there is a great deal of uphill work to be done.

There is the old balance due to the lords, and which your committee promised, at

an interview with Mr. Downing on March 1, should be paid 14 days after the present meeting, which, together with the bankers' balance and merchants' accounts, will more than absorb the amount of the call by some 200*l.* or 300*l.* We are well aware of the great hardship these calls entail upon many of the shareholders, and have endeavoured to make them as easy as possible; if we could have avoided this we would gladly have done so, but to work a large concern like ours we must have first-class credit, and, in justice to ourselves, a working capital, which we hope to make from present returns. I would caution you not to be too sanguine of immediate success in returning to dividends, and on the other hand I would say do not part with your shares thoughtlessly, for I believe we have got, with time, a good property. If our bottom levels should turn out anything like the upper ones, we shall be able again to pay fair dividends, but you are aware we must work at greater cost comparatively than formerly, on account of the greater depth of the mine.

Mr. HEARD seconded the proposition. Soon after the present committee obtained possession of the books it was thought that a call of 10*s.* per share would meet the liabilities, but it was subsequently discovered that the deficit really amounted to 7500*l.*, requiring a call of 2*l.* 10*s.* per share. That bore out the Chairman's hopes that the call now proposed would be the last required.

Mr. SHARP did not think there was any mine in the county of Cornwall in a sounder position—with accounts charged up to end of February, and no ore credited not actually sold. From now the mine starts with a clear book.

A call of 20*s.* per share was made.

Mr. HEARD, referring to the accountants' report (a copy of which had been forwarded to each shareholder), said that the more he (Mr. Heard) looked into it the more satisfied was he that the new management had saved the mine, as it were, when at its last gasp. It would be seen that the old management had paid dividends out of capital. It would be seen that in December a dividend of 6000*l.* had been paid, but certainly not earned, the credit balance from October being taken into account, leaving a deficiency of 104*l.* 19*s.* 1*d.*; the next quarter ending March, 1870, another dividend of 6000*l.* was paid, leaving 4279*l.* to the bad; this dividend clearly should not have been declared, it was not earned, and left the mine nearly 4400*l.* in debt, and had been mainly the cause of the deficiency. The next quarter to June, 1870, showed a credit balance of 2559*l.*, whilst a dividend of 6000*l.* was paid, leaving a deficiency of 3740*l.*; this dividend was nearly three times the amount earned, and added to the debt against the mine, bringing it to over 8000*l.* Of course the shareholders were responsible for such mismanagement, having let it go by default. It was clear if the present management had not stepped in at the 11th hour the mine would be in the Stannaries Court, and all knew what that meant.

The result of Mr. Warwick's analysis is this—That from October, 1869, to November, 1874, a period of five years, dividends to the amount of 39,375*l.* were paid, and the profits were actually 31,830*l.* 6*s.* 7*d.*, which shows at that sum of 7544*l.* 13*s.* 6*d.* was divided in excess of amount earned, and that caused the deficiency, the incorrect divisions having been made in 1870 and 1871. The sums expended by Mr. Clogg, and for which they had no vouchers, amounted to 2585*l.* 7*s.* Mr. Warwick had applied to Mr. Clogg for information and vouchers, and to know why the following were charged to the mine, as they appear to be incorrect, unless specially authorised by the shareholders.—Capt. Julliff's expenses over and above salary: From August, 1871, to July, 1873, 82*l.* 11*s.* 6*d.*; from August, 1873, to July, 1874, 59*l.* 3*s.* 11*d.*; from July, 1874, to November, 1874, 3*l.* 18*s.* 8*d.*; equal to 145*l.* 14*s.* 1*d.*. The mysterious item "sundries," without any explanation whatever, from August, 1871, to July, 1873, amounted to 63*l.* 2*s.* 1*d.*; from August, 1873, to July, 1874, 46*l.* 0*s.* 3*d.*; from July, 1874, to November, 1874, 10*l.* 3*s.* 10*d.*; making 119*l.* 6*s.* 3*d.*. He next came to the startling item "amortishments," amounting to 452*l.* 3*s.* 11*d.*, and 228*l.* for Mr. Clogg's expenses, in addition to salary, and 117*l.* for Capt. Johns' expenses. Under these circumstances the committee had felt bound not to allow these items to pass without being challenged, and without further investigation Mr. Clogg had been applied to for vouchers, to which he had written a reply, evidently treating the whole thing as a joke. The committee had consulted their legal adviser for the fullest information as to what course should be pursued, and it appeared that the best way to follow up the matter was by the application for an explanation, and insisting upon a definite reply. Mr. Berry had been instructed to write to Mr. Clogg for that information, and the result would determine them whether they should pursue the matter further.

The CHAIRMAN said it was the opinion of their legal adviser that Mr. Clogg was liable to any one shareholder who bought shares at the time, but if the shareholders left the matter in the hands of the committee they would do the best that could be done for the company. In justification to themselves they should have some explanation from Mr. Clogg.

A SHAREHOLDER took the opportunity of thanking the committee for having forwarded to the shareholders, prior to the meeting, a statement of accounts showing the financial position of the company; it was quite a new feature in cost-book mines.

A special meeting was then held for the purpose of forfeiting shares in arrears of call. The CHAIRMAN: I have to propose that all shares, 117 (155*l.*), with calls unpaid, be forfeited; it is nothing but right to the present shareholders that this should be done. Our second call was 20*s.* per share, and the time for the payment; in the majority of cases he has not had a reply. It is not our wish, or I dare say yours, that these shares be forfeited; they will have 24 days to consider, as there must be a special meeting to confirm this, and in the meantime if the calls are paid, with the interest due on them, the forfeiture will not be carried out. I beg formally to move that the above number (117) of shares be forfeited, subject to the usual confirmatory meeting.

The resolution, having been duly seconded, was put, and carried unanimously. A vote of thanks to the Chairman and committee closed the proceedings.

EAST LLANGYNOG LEAD MINING COMPANY.

The final meeting of this company was held, on Tuesday, at the Guildhall Tavern, Gresham-street, to receive the accounts of the liquidator appointed by the company (Mr. Thomas R. Clarke),

Mr. JOSHUA MOSS in the chair.

The LIQUIDATOR having read the notice convening the meeting, said the balance-sheets which he had prepared were somewhat voluminous. He had, however, a statement of the assets and liabilities, showing the actual balances due to and by the company at the date of going into liquidation. The liabilities included—Wages, 453*l.* 16*s.* 5*d.*; agent's salary, 18*l.* 9*s.* 4*d.*; sundry expenses at mine, 2*l.* 14*s.* 9*d.*; merchants' accounts for stores, &c., 75*l.* 14*s.* 6*d.*; for machinery, 55*l.* 9*s.* 8*d.*; carriage and tolls, 12*l.* 14*s.*; royalty, 269*l.* 10*s.* 6*d.*; solicitors' charges, 170*l.*; dilating and plan making, 20*l.*; directors' attendance; fees, 29*l.* 8*s.*; travelling expenses, 8*l.* 14*s.* 10*d.*; the directors' salary, 109*l.* 12*s.*; secretary's salary and office rent, 51*l.* 3*s.*; auditor's fees, 42*l.*; printing, stationery, and advertising, 15*l.* 8*s.* 6*d.*; Mr. J. Moss (balance of loan and interest), 63*l.* 8*s.* 11*d.*.

Mr. C. E. DAVIDSON: What is the total amount?—Mr. CLARKE: 1503*l.* 19*s.* On the other side were the following items:—By forfeited shares, 1464*l.* 9*s.*; tollgate, 25*l.*. These two items were classed together as not realisable, inasmuch as forfeited shares were of no value when the company was in liquidation, and the tollgate was included with the plan making, &c. Sundry persons for interest, 9*s.* 9*d.*; arrears of calls, 37*l.* 5*s.*. These were not realisable, some of the shareholders having died, and others removed and their letters returned. The assets considered good were cash at London and Westminster Bank, 83*l.* 13*s.* 7*d.*; in hand, 93*l.* 6*s.* 11*d.*; at mine, 5*l.*; owing by C. Rule for royalty, 50*l.*; bill receivable, 266*l.* 18*s.* 3*d.*; total, 488*l.* 18*s.* 9*d.*. The following is an account of what I have done since I was appointed liquidator, up to the present time:—Balance of cash as per company's account, 182*l.* 0*s.* 6*d.*; arrears of calls received, 31*l.* 9*s.*; lead ore sold, May 4 to July 31, 1874, 749*l.* 14*s.* 10*d.*; the bill receivable was got in, 256*l.* 18*s.* 3*d.*; interest and discount (balance) owing to the company, 9*s.* 9*d.*; liquidation, 58*l.* 11*s.* 11*d.*; sundry receipts, 5*l.* 13*s.*; tollgate receipts for the passage of farmers' carts, &c., 4*l.* 12*s.* 4*d.*; amount realised by sale of lease, buildings, machinery, plant, &c., 3500*l.*. The payments included the items chargeable against the company on May 4, 1874, and those incurred since that date showing an actual profit on the working of the mine during liquidation of 69*l.* 1*s.* 4*d.*. The balance carried to dividend account was 255*l.* 6*s.* 10*d.*. Out of this sum a dividend of 1*s.* 0*d.* was declared, amounting to 1503*l.* 19*s.* 0*d.*, the balance reserved for liquidation charges being 24*l.* 12*s.* 4*d.*. A portion of this sum had already been expended in various ways, and the balance still remaining would have to be used for registering the meeting, printing and sending out copies of the balance-sheet, and other necessary expenses.

Mr. C. E. DAVIDSON thought the mine was very properly kept at work; the sequel had shown that it was a very prudent thing to do. The only thing he should like to have seen, would have been the accounts published and circulated prior to that meeting, and that mention that large shareholder in the late company, he felt deeply interested in the question.

Mr. J. TAYLOR said that the Act of Parliament did not require the accounts to be circulated.

Mr. DAVIDSON said he did not mean to imply that there was any positive obligation to circulate them, but thought it might have given more satisfaction. It was clear that if the mine had not continued work the bulk of the liquidation charges would have been incurred, and that would have made a very substantial deduction from even the shilling a share had been returned to the shareholders. Speaking to Mr. Clarke, he said he understood that by working the mine he had managed to make a profit of 60*l.* odd.

Mr. CLARKE: Yes, 60*l.* 1*s.* 4*d.* is the balance of profit. But there were certain payments, my own remuneration as fixed, 25*l.*; solicitor's charges, 23*l.* 14*s.* 4*d.*; auctioneer's charges, 8*l.* 15*s.*; and sundry other small items, such as printing, postage, and so on, which would under any circumstances have had to be paid, and these would materially increase this balance of 69*l.* 1*s.* 4*d.* profit in working the mine.

Mr. DAVIDSON asked whether, after payment of these sums, there was still a balance of 69*l.* on the working?—Mr. CLARKE: That is so.

Mr. DAVIDSON: Then I think it highly creditable to the liquidator that such should have been the case, and I feel, as a large shareholder, very much obliged to him, and really indebted to him, for his having managed it so carefully and so economically.

Mr. TAYLOR said there were few liquidations that were conducted with equal economy. Had it not been for the strong personal interest that had been felt in the concern by Mr. Clarke and others, the liquidation accounts would not have appeared as they did.

The CHAIRMAN stated, for the satisfaction of gentlemen concerned, that the balance-sheet had been regularly audited by a professional accountant, and had his sanction and signature. He did not know that it was necessary for him to say anything in addition to what had been stated, but he would move the following resolution:—"That the statement of the liquidator's account, showing the manner in which the winding-up of this company has been conducted, and the property of the company disposed of by him, pursuant to the resolution passed at the property meeting of the company on the 4th day of May, 1874, having been laid before this meeting, the members hereby approve of the same, and it is resolved that the said account be received and adopted, and that the said liquidator do forthwith take the necessary steps for dissolving the said company."

Mr. DAVIDSON seconded the resolution, and he did so with the more confidence had not the opportunity of being present at the meetings that took place just about the time of the winding-up of the company, but from all he could learn he apprehended that the management of their unfortunate company—at the latter end certainly, whatever it might have been at the beginning—had been carefully and economically attended to, inasmuch as he could understand that the best price obtainable had been realised for the property, and the most careful and economical means adopted to realise the assets of the liquidator's account, showing the management of the liquidation altogether had been as successful as reflected credit on Mr. Clarke, and he, therefore, very cordially seconded the resolution proposed by the Chairman. He ought to state to the gentlemen present that he was entirely unconnected with the management of the company in any shape, but simply stood

there as one of the shareholders of the late company, holding 200 shares, for which he had paid cash at a large premium. They might, therefore, suppose that he spoke really what he felt.

Mr. D. BAXTER said it was his pleasure to be appointed auditor at the commencement of the company, and he had maintained that position ever since. Now that the company was on its last legs it was his duty to bear testimony to the way in which the accounts had been kept, which reflected great credit upon Mr. Clarke. When, therefore, that gentleman was appointed liquidator he felt that they could not have made a wiser choice; he was perfectly conversant with all the affairs connected with the mine, and would be able to wind them up economically. He (Mr. Baxter) had gone through the accounts most carefully. He spent a considerable time over them at Midsummer, and he was hard at work again nearly all last week, taking the utmost care that everything should be done to separate the company's accounts proper from those in liquidation. The result was that a balance-sheet had been prepared, in two columns, setting forth the income and expenditure on the part of both undertakings, and the result had been, as Mr. Clarke had said, a profit on the liquidation. He had had a good deal of experience in liquidations, but he could assure the meeting that it was hardly one in a thousand that was carried on to a profit after the liquidation had been decided upon. This, however, was certainly a case in point, and it indicated two things: in the first place, it seemed a thousand pities that the company should have had to be wound up at all; there certainly was something in the mine, or it could not have been got out with so little effort; in the second place, it certainly indicated that the affairs of the company had been wound up most economically. The expense had been very small, and the bulk had been incurred in wages at the mine, and in realising the ore produced, which had been sold for nearly 800*l.*, and a dividend had actually been paid out of the profit made. He thought the utmost credit was due to Mr. Clarke, and he did not see how the company could feel otherwise than deeply indebted to him.

Mr. GEORGE BUDD said he was only a small shareholder, but he wished to know whether the petition filed against the company in the Court of Chancery would interfere with them in any way.

Mr. A. D. SMITH (the solicitor) said they had every reason to hope and believe that the petition, when called on, would be dismissed. The shareholder on whose behalf it was presented held 16 shares, and it was not likely that any trouble would arise from it. The object of those who had taken the matter up was evidently to make business for themselves. Nothing had been done, either by the late board or by the liquidator, that would not bear the strictest scrutiny.

The resolution was then put, and carried unanimously.

The CHAIRMAN said he felt that he had now washed his hands of the company, and he was certainly not looking for any further liability in reference to it.

Mr. J. MEGINN thought they ought to propose a vote of thanks to the liquidator for the manner in which he had conducted the liquidation, and the profit he had shown; he felt sure they would all highly appreciate the way in which he had done it.—A SHAREHOLDER had very great pleasure in seconding the motion. Mr. CLARKE had done his work most efficiently.

The resolution having been unanimously carried, Mr. CLARKE said he was very much obliged to them for their vote. His sole object had been to do his work in a proper manner, and to show a satisfactory result to the shareholders.

Mr. DAVIDSON moved, and Mr. BUDD seconded a vote of thanks to the Chairman for the manner in which he had conducted the business of the meeting.

Mr. BAXTER thought the Chairman merited both their thanks and sympathy, as he was a very heavy loser by the winding-up.

Mr. MEGINN remarked that the Chairman paid a large sum for his shares, and he had held them from first to last.

The CHAIRMAN, after thanking the meeting for this expression of good will, said he had to regret very deeply that they had not come to a better issue in the concern. He had no doubt himself at the time he embarked in the undertaking that they were going to have such a venture as the mining world seldom sees. That was his conviction from what was before them, and he was sorry the result had been so different.—The proceedings then terminated.

NEW SHARLSTON COLLIERIES COMPANY.

An extraordinary general meeting of shareholders was held at the Cannon-street Hotel, on Wednesday, Admiral HORNBY in the chair.

Mr. SAMUEL M. ROBINS (the secretary) read the notice convening the meeting, which stated that it had been called in compliance with requisitions signed by the holders of 2614 shares for the "proper consideration" of alterations in four clauses in the company's Articles, and "to consider such resolutions as may be deemed necessary in reference to conducting of the said last meeting;" and in compliance with further requisitions signed by holders of 2712 shares for the purpose of submitting the resolution—"That as no advantage has been or is likely to be gained by the company through the nomination of Messrs. Beck and Whitehead and Dr. Hollings as directors, and as the presence of these gentlemen on the board appears to make dissensions therein, and is prejudicial to the interests of the company, they be and are hereby removed from office; and the remainder of the directors are hereby requested under their powers to elect three Yorkshire or North Country shareholders in whom they have confidence to complete the board of directors of the company." The Yorkshire party (the requisitionists holding the 2614 shares) proposed to alter the Articles so that the registered office should be "at the colliery," instead of "in London;" so that proxies might be used in demanding a poll; so that the accounts should be audited "once every year at least," instead of "from time to time;" so that the balance-sheet and report should be sent to every shareholder with the notice convening the meeting; and to censure the Chairman of the last meeting.

The CHAIRMAN said that when he addressed them six weeks since he believed everything had been amicably arranged, and did not at all expect that they would be so soon called together again. Since the meeting, however, he had received one of a good many circulars issued, which he did not hesitate to characterise as unfair, un-English, and at variance with facts. There was hardly any statement which had any truth in it at all, and none that could not be satisfactorily explained. He deprecated this dirty and unwholesome way of whispering people's characters away behind their backs. He had been called a promoters' director, but he would ask whether he had not been in opposition to the promoters from the moment he came upon the board, and he could honestly say that he had never received the value of half a straw from the promoters. When he understood that there was a possibility of vacancies on the board he had endeavoured to secure the co-operation of Mr. Bainbridge and Mr. Strachan, and if those gentlemen could be induced to come upon the board he believed every shareholder would have confidence in them. It was not merely because he had invested in the company that he was desirous of its welfare, but for his name's sake. He was not a party man, but he could not help saying that he was fully convinced that no greater calamity could happen to the company than to let the management fall into the hands of Messrs. Beck, Whitehead, and Dr. Hollings, and should he remain at the board, which he had no wish to do, he would certainly move to rescind the resolution giving power to them. He concluded by calling on Mr. Hindle (the representative of the Yorkshire party) to move his first resolution.

Mr. HINDLE would at once say that as to the Chairman's remark that he had been described as a promoters' director he maintained that as his name appeared with also that of Sir F. Williams and others upon the original prospectus the shareholders had been induced to pay their money, but he never intended that Admiral Hornby had not paid for his shares like any other shareholder. He went on to say that he believed the London office was not at all necessary, and that all the other large Yorkshire colliery owners had their offices at the collieries, and did not attempt to manage at 200 miles distance from their place of business. He thought that if they could make any retrenchment they were bound to do it. His expenses amounted to 5½ per cent. upon the turnover, which he considered too high. He considered the pruning knife should be applied freely, and they should begin at the London office. He estimated (but it was afterwards shown that his figures were erroneous) that 1340*l.* 15*s.* 9*d.* could be saved by getting rid of the London office, but to be on the safe side he would say 1200*l.*, and he would employ a manager who could write his own letters instead of dictating them to a clerk. He complained that the property was originally purchased for 160,000*l.*, and re-sold to the company for 240,000*l.*, so that the promoters realised a profit of 80,000*l.* on the transaction. His resolution was that the words "at the colliery" be substituted for "in London" in clause 6.—Mr. JABEZ THOMPSON seconded the motion.

Mr. NIELSTROP thought the New Sharlston Collieries Company was brought to a fine pass. The board was at loggersheads, and he did not think it likely that under these circumstances there could be any unity of effort or of judgment. The question of removal must be settled by removal from London to Yorkshire. The directors admitted that it would save 200*l.* a year, and that was certainly worth saving. They could have an agent in London, as they had at Golee, where they had one of the best men in Yorkshire. He considered that much which had been said and written by members of the board would have been better unsaid and unwritten, but that could not now be remedied. He was an independent shareholder, and had never attended a meeting of the Preference Shareholders' Association, but he believed the company had paid 200,000*l.* too much for the colliery. As to the colliery and its management, he had recently visited it, and he felt bound to say that, although he had heard complaints that everything was going to ruin, he saw no evidence of it. He was very careful in his examination, and though they had over 500 hands employed he failed to find a man idle; everything was going on as well as could be wished.

Mr. WHITEHEAD said it had been inferred that if the management came into the hands of himself, Mr. Beck, and Dr. Hollings, the concern would go into liquidation in six months. Could the Chairman give any guarantee that if the three Yorkshire directors retired it would not go into liquidation before next February?

The CHAIRMAN did not see the necessity of giving a guarantee, but he remembered the old proverb, that they "should not swap horses whilst crossing a stream." In December they would have to pay off a part of the mortgage, and if the company had a board in whom they had no confidence, it would be much more difficult to arrange with them than under other circumstances. He had no ill-feeling towards Mr. Whitehead, but put no trust in his business knowledge to carry on the concern.

Mr. WHITEHEAD enquired whether they had sufficient money to go on until February.—The CHAIRMAN: Yes, certainly.

A SHAREHOLDER asked whether the Chairman considered the London offices indispensable.

The CHAIRMAN said he was not one of those who thought it necessary to retain the offices in London, but did not consider the present proper time for making the change. The expense which the London office involved had been much over estimated, and he learnt that the clerks were frequently kept there on the business of the company until nine o'clock in the evening, and that no less than 12,480 had been let out from the office during the year ending Dec. 31 last. These various general meetings would cost the company from 150*l.* to 200*l.*, and they were, moreover, acting as a dead loss to the whole concern. He

had told them that the suspension of profits was only temporary, and since the beginning of the year they had been making profit. If he remained on the board, the question of removal of the registered offices to Yorkshire should, he promised them, be fairly discussed; but he might tell them that unless they had a properly constituted board they could not go on well. The reason the old board and the new board at the board would not work together, as a shareholder had said, was soon explained. They were prepared to co-operate with the new board, but when he went to the board meeting the day after the meeting he was charged, in not very polite language, with telling falsehoods, and one of the new board charged another director with buying from the colliery at 11s. per ton, while other customers were paying 18s., although it was afterwards found that Mr. Moy, owing to the terms of the contract complained of, was really paying 2s. more than the other people.

Mr. BECK said he had made a mistake, and would honestly confess it; but it was unfair to bring the matter before a public meeting. Mr. WATTS believed that at the last meeting the resolution to remove the offices to Yorkshire was considered and declared lost, and he considered the question settled for 12 months. It is most important that the shareholders should not be kept in a state of agitation the year through. They had better lose a few hundred pounds by retaining the London offices than damage their business by this agitation. He did not think those gentlemen in Yorkshire had shown good judgment, and he must say that he thought that, before one gentleman charged another gentleman with falsehood and dishonesty, he should at least be certain that he is correct. He thought it unwise to take the step proposed at the present time.

Mr. BECK had only come in contact with one officer of the company—their secretary, and he never saw a better man for the position; but if he could not go to Yorkshire with them, he was sorry for it, but personal considerations could not weigh now.

Mr. BARNETT said he was the largest shareholder in the company, and questioned the desirability of directors visiting the colliery daily. At all the most successful of the large collieries the absolute management of the pits was left pretty much to the manager, who was responsible to his employers. This they had done here hitherto, and if there were two or three men on the management who mismanaged their business the concern would go to the dogs quicker than it is doing at present.

Mr. BUTLERLAND was prepared to support the removal, but thought some vital points should be first settled.—The show of hands was then demanded, and as only 42 voted for the amendment, and 33 against, the motion was declared lost, the Act of Parliament requiring a majority of three-fourths of those present to carry a special resolution. A poll was thereupon demanded by Mr. Hindle and friends, but afterwards withdrawn, it being shown that one-fourth of the votes of the shareholders had already by proxy been recorded in favour of retaining the office in London—a number sufficient to prevent the alteration of the Articles of Association.

After much further discussion the other motions were by consent withdrawn, the Chairman having announced that he had accepted an arrangement which he hoped would prevent further discord at the board, at least for the present.

Mr. STRACHAN suggested that 11. per share should be subscribed in order that litigation, altogether independent of the company's funds, should be commenced against the vendors with a view to get a return of a portion of the purchase money, but the proposition was very coldly received.

A unanimous and cordial vote of thanks was then passed to the Chairman and duly acknowledged, the meeting, which had lasted 3½ hours, then terminating.

SOUTH WARD MINING COMPANY.

At the general meeting of shareholders held on Thursday (Mr. W. A. Thomas in the chair), the accounts for 16 weeks ending March 20 showed a balance due to treasurers of 547.2s., and an estimated balance against the mine of 1115.18s. 1d., to meet which it was determined to make a call of 5s. per share. At a special meeting to consider the forfeiture of shares upon which certain calls remained unpaid, it was resolved to declare such shares forfeited, and the secretary was authorised to take such steps as may be necessary to enforce payment of all calls due thereon, as well as any other calls due by defaulters. The manager (Capt. Goldsworthy) being present, the future prospects of the mine were fully discussed; and although he could not but state that the mine at the present moment was unproductive, he had every hope that as soon as the communication between the 60 and 72 fm. levels, on the eastern lode, could be effected, when the 72 would be forced on as fast as possible, that a discovery would be made to place the affairs of the company in a more satisfactory position. At the same time, he recommended that the cross cut at the 90 should be continued without delay, to cut the lode seen in the levels above. The present company having already expended over 12,000 on the development of this mine, the committee were requested to devise some means for relieving, to a certain extent, the heavy pressure upon the present shareholders, and they will shortly confer as to the best measures to be taken for raising further capital. This, it is believed, can be effected by an issue of new shares, giving each present holder the option of taking a corresponding interest or less, and offering to the public any unallotted shares.

RIO TINTO COMPANY.—At the second ordinary general meeting of shareholders, yesterday, the report of the directors was adopted. The chairman, Mr. H. M. Matheson, stated that very satisfactory progress is being made with the railway to the mine, and there is every reason to believe it will be open for the carriage of ore about three months before the time originally anticipated. A full report of the proceedings will appear in next week's Mining Journal.

EAST CHIVERTON.—At the meeting, on Wednesday (Mr. A. Creak in the chair), the accounts showed a debit balance of 190.19s. 7d. The report of the agent (Capt. Southey) was read, and ordered to be printed and circulated among the shareholders. In explanation, Capt. Southey stated that he expected within six months something good would be met with; if not, he should come to the conclusion that the mine was unworthy of further development. He estimated the value of the machinery at from 1000. to 1200. The accounts were passed and allowed, and a call of 5s. per share was made. Mr. E. Hilton was elected a member of the committee.

CARGOLL.—At the meeting, on Tuesday, the accounts for the 12 weeks ending March 6 showed a credit balance of 194.3s. 2d. A call of 2s. 6d. per share was made. A vote of condolence to the family of the late Capt. John Gross, who died suddenly, was recorded in the cost book, and the purser was requested to send copy. Capt. John Jennings, of Camborne, was appointed manager at 25. per month, to devote his whole services to the mine. Capt. J. B. Champion reported upon the various points of operation. The engine continues to do its duty satisfactorily, with a consumption of about 15 cwt. of coal for 24 hours. In the absence of rich deposits of ore, the indications at the 11 fm. level are very favourable for making good deposits of ore in deeper levels, and if the mine be worked vigorously with a sufficient number of hands, he has no doubt they will be rewarded for their patience and outlay.

NERBUDDA COAL AND IRON COMPANY.

The following report will be read at the meeting of shareholders, at the London Tavern, on Monday:—

On presenting the fifteenth annual report, the directors have at last the pleasure of congratulating the shareholders on the fact that the operations of the company for the year ending Dec. 31, show a profit sufficient for the payment of a dividend, which they recommend should be at the rate of 5 per cent. per annum, free of income tax, and they trust that, in the future, a dividend of 10 per cent. will be the first since the company has been established, a period of over 15 years. The shareholders will read with interest the official report of Mr. Walter Ness to the Chief Commissioner of Public Works on the condition and prospects of the company's collieries. Mr. Ness is the Government Mining Engineer at Worra, and was deputed by the Indian authorities, at the request of this company, to inspect and report on the collieries; his report more than confirms the views that have hitherto been expressed by the managers. The output of the mine at the 11 fm. level is very favourable, amounting to 15,650 tons. The sales were 13,845 tons round and 40 tons screened coal. The colliery consumption was 1186 tons, and the stock on hand, at surface, on Dec. 31, 608 tons small coal. The sinking on the Mulpee plain, as will be seen by the manager's reports, has not attained any material depth, consequent on the many difficulties incidental thereto that have been encountered, more particularly the want of labour. Under the improved expectations from the existing shafts and openings, this delay is fortunately of not so much importance as it otherwise might have been.

An interesting, and it may be a valuable, discovery of copper has been made by Mr. Maynard, on an island in the Nerbudda river, within the company's territory. The assays of the ore made in this country, and also in India, have produced over 20 per cent. of copper. With the view of ascertaining whether the mine can be worked at a profit, if the vein should prove large on the further exploration now in progress, instructions have been given to the agent to send over to this country a sufficient quantity of the ore to be tested by actual smelting. Previous to this discovery the existence of copper in the region described had not, it is believed, been known.

As regards the release of this company from their contract obligation to manufacture iron, the directors had hoped that they would have been able to have stated in this report that the arrangements had been definitely settled; although this is not the case, they have every reason to believe that it will soon be concluded without further reference to India, and on terms satisfactory to the shareholders.

The accounts have, as hitherto, been audited in England by Messrs. J. Waddell and Co., public accountants. In accordance with the suggestion mentioned at the last general meeting, and concurred in by the shareholders, a very careful audit has on this occasion been prosecuted in India under the supervision of Mr. T. W. Wood, chief auditor and accountant to the Bombay, Baroda, and Central Railway Company. Mr. Wood's report is most satisfactory, and the directors are pleased at having been able to obtain it at so early a date after the year now under review. The revenue account for the year, deducting all charges, inclusive of outlay on the new winning and the No. 2 shaft, but exclusive of the expenditure on the copper mine, exhibits a net profit of 5697.10s. 8d., out of which the directors propose to pay a dividend of 5 per cent. per annum, free of income tax, on the paid-up capital, carrying forward with the surplus of last year's revenue a balance of 640.1s. 4d. The liabilities of the company on Dec. 31, 1874, as shown in the balance-sheet, were 2352.14s. 4d. The directors who retire by rotation are Mr. T. S. Haviside and Mr. John R. Manning, both of whom being eligible, offer themselves for re-election.

THARIS SULPHUR AND COPPER COMPANY.—The report of the directors states that there were extracted from the north lode of the Tharis Mines during the year 1874 of large ore 376,676 tons, and of small ore 25,697 tons, making a total of 402,373 tons, being an increase over 1873 of 111,307 tons. This large output had enabled the company to recoup the balance of 19,535s. of the advance royalty account. The Calana mine was now in excellent working order. The railways and piers had done a large amount of work during the year. The downward traffic amounted to 267,404 tons, while the traffic upwards was 17,360 tons, being a total of 284,764 tons, as against 250,727 tons, or an increase of 34,037, as compared with 1873. The additions to the railway property and plant account had cost for the year 869s., the downward traffic had earned the rate of carriage

charged on the mineral shipped, from which had been deducted the interest on 100,000s. of the debentures and all other charges, leaving a net surplus of 8578s., which had been added to the railway sinking fund account, which now stood at 71,311s. The quantity of refined copper delivered to buyers was 5286 tons, as against 5110 tons in 1873, or an increase of 176 tons. The net profits of the year 1874, together with the balance from 1873, amounted to 229,323s. The directors recommended that 235,000s. be appropriated to the payment of a dividend of 25 per cent., free of income tax, 12½ per cent. payable on May 10, and the remainder next November, leaving a balance of 4324s. to be carried forward. The total paid-up capital amounted to 900,000s.

For remainder of Meetings see to-day's Journal.]

NEW ZEALAND PROGRESS.

In this age of materialism it would appear that there is great truth and force in the aphorism that the country which has the most coal will achieve the most material progress. It is, therefore, of considerable interest to note that New Zealand is rich in coal. A coal vein 6 ft. in thickness has been cut through in the province of Canterbury; the quality of the coal met with is said to be good, and the coal is expected to yield 7200 tons per acre. The measures are said to be regular, and the coal appears to extend over a large area. The coal fields of the province of Auckland in the north island are also extensive and valuable. In several places large seams crop out upon the surface; this is the case at the Wawakawa, Waikato, and Whangarei Mines, which alone have been worked, and which have already yielded a large amount of good coal. Work at the Whangarei Mine has been suspended for several years, owing to the flooding of the mine, which abuts on the beach at Kawakawa; the seam in the mine averages 12½ ft. in thickness, and 100,000 tons have been taken out. At Waikato the seam which is being worked varies from 6 to 18 ft. in thickness; it lies horizontally, and yields a fine coal. At Whangarei a thick seam of pitch coal has been found, but it has never been worked. Brown coal—somewhat similar, we presume, to the Bohemian braunkohlen—has been found at Matakana, Drury, and Mokau. At Drury this coal was worked nine years since, but the mine was closed, in consequence of the cost of carriage at that time. Probably when the Waikato Railway is completed the mine will be re-opened. At Waiapu, Raglan, Coromandel, Parengarenga, Awhitu, Whanau, and other places coal has been found. Very large deposits exist on the west shore of the Firth of Thames. An English company intends, it is understood, to open a mine in this locality; and the site being convenient for shipping, there are confident hopes that the enterprise may prove successful.

The New Zealand Government has shown a disposition to pursue a bold and enterprising policy of railway development, and the best results may be augured from this. At a recent date this beautiful and prosperous colony had 434 miles of railway in operation, and an immigration and public works loan of 4,000,000s. has recently been concluded by the New Zealand Government, through the great house of ROTHSCHILD. It may be expected, then, that the vast natural resources of New Zealand will be opened out in an accelerated ratio during the next few years. The colony has now accumulated a white population of 300,000; but the British flag having been hoisted upon the New Zealand soil so long since as 1841, it has taken, after all, 34 years to bring about this result. We may expect that in the next 34 years the white population of the colony will grow from 300,000 to 3,000,000. The credit of the colony is now established upon a tolerably substantial basis; the Maories have exhibited a more pacific and contented attitude than at any time for 30 years past; and the great natural resources of the two beautiful islands are more fully understood and appreciated in Europe than at any previous period. Every New Zealand colonist will probably be, on an average, the means of bringing out some friend to bear him company and share his fortunes; and the working of New Zealand coal will, of course, give a great stimulus to the development of New Zealand manufacturing industry. Between the New Zealand of 1842 and the New Zealand of 1875 there is a great and remarkable contrast; the New Zealand of 1908 will, in all probability, excite still greater wonder, and elicit still more unanimous admiration. All possible success meanwhile to New Zealand coal mining!

FOREIGN MINING AND METALLURGY.

Transactions in the French iron trade have been of a rather less serious character. Some transactions have been reported, but there has been only a small current of orders, and, upon the whole, it may be said that there have been no contracts of serious importance. Champagne appears to be the most favoured district as regards orders. Prices have also remained unaltered in this district. At Paris sales have been effected with some difficulty. There has, however, been a slight demand for iron and castings for building purposes. Although the aspect of business is not very brilliant, orders are far from making default in the case of the great workshops. Thus MM. Cail and Co. have since the commencement of the present year obtained orders for work to the aggregate value of 280,000. During 1874 this firm received and executed orders to the aggregate value of 800,000. The works of the Centre and the basin of the Loire have only a comparatively small amount of business. In the Meurthe-et-Moselle pig and cast-iron remain at the same rates. The Tusey (Meuse) and not the Bussey Works, as stated last week, have obtained an order from the Eastern of France Railway Company for the delivery of fifteen hydraulic cranes. The French Minister of Agriculture and Commerce has addressed a circular to the French Chambers of Commerce, calling their attention to the fact that the commercial treaties concluded by France with foreign countries will expire in two years. The circular further invites Chambers of Commerce to study the conditions required for the establishments of new customs' tariffs. A commission has been appointed to enquire into the improvements of which a law of 1870 on industrial partnerships may be susceptible. A recent official return shows that in 1873 France possessed 1148 establishments devoted to the working of iron, and employing 81,939 workpeople. The motive force utilised was 77,229-horse power, of which 58,811-horse power was derived from steam motors, and 18,418-horse power from hydraulic motors. Metallurgical industry was carried on in 1873 in 47 French departments, the Meurthe-et-Moselle heading the list with a production of 268,600 tons. In the course of 1873 the French made 1,371,495 tons of rough pig, 818,934 tons of iron, and 198,413 tons of steel. Steel, it may be added, was made in 16 French departments, the Loire having produced 65,700 tons, and the Saône-et-Loire 49,000 tons.

The decline which has taken place in pig in Great Britain and the Luxembourg has naturally had some effect upon the Belgian iron trade, and has rendered it still more difficult for Belgian ironmasters to deal with foreign competition. In rolled iron some small transactions have taken place at far from remunerative rates, but no real revival can be said to have taken place at present in Belgian metallurgical affairs. The Espérance Company (Liège) has—thanks to the spirit of enterprise which characterises its intelligent director, M. Borgnet—just brought into activity a fine differential rolling-mill, on the Lanth and Deby system. The success of this apparatus has been complete, and has left no doubt as to the possibility of applying this description of rolling-mill to iron of more considerable thickness. In the Charleroi basin the works of M. Victor Gilliaux, furnished recently with an excellent differential train for plates, is also preparing to light its first Pernot furnace. The Marihaye Collieries Company will pay on May 4 a dividend for 1874 at the rate of 6s. 10s. per share.

The demand for some descriptions of coal in Belgium is less active than it was a month since. Unless a sensible diminution takes place in the extraction it is tolerably certain that stocks will begin to form, and it is this which colliery proprietors are endeavouring to avoid by all possible means. They are assisted in their object by the annual migration of brickmakers from the pits, which is proceeding on a considerable scale. Most of the Belgian colliery managers see with alarm the exhaustion by degrees of beds which are economically accessible, and they desire to prolong as much as possible the limited period of their existence. This is foresight, no doubt, but is it commendable? The Péronnes Colliery Company extracted last year from its workings 98,170 tons of coal, as com-

pared with 71,742 tons in 1873, showing an increase last year of 37 per cent. The net profit of 1874 amounted to 12,745s., admitting of a dividend of 1s. per share. The extraction of the Gosson-Lagasse Colliery Company amounted last year to 218,313 tons, against 232,038 tons in 1873. The net profit of 1874 amounted to 35,994s., admitting of a dividend of 7s. per share.

The same indecision prevails in the French coal trade. Coalowners continue to offer a stout opposition to any further reduction in quotations, but buyers show an equal determination not to meet the views of sellers. Under all the circumstances, it is not surprising to see a languishing market, upon which transactions are limited to the most urgent requirements. Although the extraction of coal has been generally reduced in France stocks exist at a considerable number of the mines, and the consumption for domestic purposes has rather considerably declined. The conclusion of no important coal contract has been noted at Paris; the arrivals have been of rather more importance than hitherto. M. Lostal, a railway contractor at Firminy, has discovered that the durability of pit wood is greatly increased when it is coated over with lime, as is the case with planks used in building operations. The profits realised last year by the Mokta-el-Hadid Minerals Company amounted to the good round sum of 105,782s., out of this sum the shareholders receive a dividend at the rate of 15 per cent. per annum.

The Paris copper market has been quiet, but quotations have slightly improved. Quotations have been to a great extent nominal at Havre. Upon the German copper markets transactions have been restricted, and prices have experienced no sensible modifications. The Rotterdam tin market has been extremely quiet; there has been very little doing in Banca; holders have demanded 5½ fls., without finding purchasers. The German tin markets have exhibited a downward tendency, without much business passing. Lead has been rather weaker at Paris; the advices received from the various German lead markets have been contradictory. There has been some improvement in the price of zinc at Paris. At Marseilles there has been little change; rolled Vieille Montagne zinc has been quoted at 30l. per ton. The German zinc markets have been inactive, and prices have been almost nominal.

FOREIGN MINES.

ST. JOHN DEL REY.—The directors have received the following telegram from Morro Velho, dated Rio de Janeiro, April 17: Produce month of March, 41,000 oits.—15,588l.; yield, 9.8 oits. per ton. All going on well.

MINERAL HILL (Silver).—Mr. Onkes, the superintendent at the mines (March 29) writes:—The ore raised during the past week is 60 tons, of an average grade of 845 per ton.

ALMADA AND TIRITO.—Telegram from Mr. Clomes: Profit for March, 815,460s.

ANTIOQUIA.—The directors have advices under date Feb. 12, accompanied by a remittance of gold, valued at 188l. 4s. 8d., the produce of the mine for the month of January. The accounts show a loss of 627.7s. 2d. Mr. G. H. Cardoso, the secretary, writes:—"Although the month's working shows a small loss, the accounts from the mines are most encouraging."

FRONTINO AND BOLIVIA.—The directors have advices under date Feb. 12, accompanied by a remittance of gold valued at 2285.6s., the produce of the mines, and from gold purchased at the mines, for the month ending Jan. 28. The account shows a profit of 638l. 1s. 8d. In this month 243l. 14s. of the expenditure is in respect of the works, the cost of which might properly be charged to capital.

BIRDSEYE CREEK.—G. S. Powers, March 29: We broke through in Pechey Tunnel this morning; the course was exactly right. It will take two or three days to take up the bottom, after which we shall proceed to put in flume as fast as possible. There is no increase of water of any amount; it rained here on the 24th about six hours, and about the same yesterday, the 29th.

SWEETLAND CREEK.—G. D. McLean, March 26: The matter of water has been exceedingly perplexing, but I have at length made an agreement for five years with the Eurica Lake and Yuba Canal Company, or the Tulelake Company. The main objection to the change is the unavoidable cost in new pipe and labour in making the change. We will have to purchase 900 ft. of 30-in. pipe and 750 ft. of 22-in. pipe, besides three joints, or 60 ft. of large tapering pipe, and three cast-iron gates or cut-offs, the latter costing about \$860, and the whole near \$5000. We also lose about 50 ft. fall or pressure. Had we retained our fall the outlay would have amounted to \$12,000 instead of \$5000. There, however, is one satisfaction we will get more and better water than we have been able to do from the Milton Company. We are connecting with the Yuba Canal as fast as we can, but will be delayed, owing to the time required to make the pipe. I cabled you that we would wash in three weeks, but now think it will take longer. If the pipe were ready we could wash in two weeks. They are now enlarging their branch ditch to a capacity of 1500 ft. I will write you more particularly when I send the contract. I have not written often of late, because there was nothing of interest to write. It will not be long until we are again under way, and I hope this time not again to be interrupted.

NEW ROSARIO.—M. V. Cumins, Feb. 27: San Pedro Level: The enclosed assays will convince you better than anything I can write of the richness of the lode. The quantity of ore amounts to 29½ cargas, or 4½ tons (exclusive of 1½ cargas of quetzonot, not assayed) the whole of which has been obtained in driving only 13½ vara (1½ yard), and the average of the ore, as you will observe, is nearly 16 marcos, or about 3 marcos above the average of the San Manuel level, and about 5 marcos above the average of Carretera. The lode continues equally good, and represents, as I am informed on good authority, as fine an end of ore as was ever seen in Carretera. Assays: No. 1, 117 marcs. 25 cts. per monito, ¼ carga, 128l. 1s. 4d. per mavo; No. 2, 33½ ditto, 3 cargas, 25s. 6s. 8d.; No. 3, 18½ ditto, 19½ cargas, 14l. 12s. 8d.; No. 4, 16½ ditto, 2½ cargas, 17l. 17s. 4d.; No. 5, 8 ditto, 4 cargas, 9l. 10s. 8d.; total, 29½ cargas.

March 11: We have an excellent lode both in the San Manuel mine and in the end of the San Pedro level, and fine rocks of ore are being raised from the shaft. With a mill to reduce our ore, at the legitimate cost of \$20 to \$22 per monito, I could at the present moment make the mine yield good weekly profits.

BATTLE MOUNTAIN.—Capt. Richards, April 21: Very good progress is being made in cutting the pit at the 330 ft. level at the new shaft, and which will be completed, I think, in about a fortnight hence, when a 330 ft. level north will be forced ahead with all speed for proof of lode at this increased depth. At the bottom of Smith's winze, down to the 330 ft. level, in addition to the cross-cut eastward of about 5 ft., there has been about 6 ft. driven south, the lode is of a very promising character, but as it contains only good stones and spots of ore, it will be more economical to wait the arrival of the 330 ft. levels coming in here from the new shaft, and so remove the stuff that way than hoisting it by manual labour through the winze, and then putting it to shaft and hoisting it again. The men are placed to put in a drift which hereafter will be known as the mine drift, south of Smith's winze, below the 280 ft. level; this drift I expect will develop the ore which at all appearances went down in the bottom of the 280, south of Cook's winze; by so doing, I calculate to be able to stop away this after awhile to advantage. In the stopes in the back of the 280 ft. level, south of Cook's winze, north of new shaft, the ore has materially fallen off, and what remains contains so much gangue as to require considerable sorting, whilst in the stopes north of Cook's winze, and same level, the ledge has somewhat improved this week, and is very promising lode. The stopes in the bottom of the 280 ft. level, near Smith's winze, still contain some rich ore in very small quantities, but of a very encouraging nature; I am greatly disappointed here, as the ledge promised to enable me to increase the returns, but it takes now all we can do to keep them up as well as we have, but a great improvement may take place any day. In the 280 ft. level, south of the shaft, we have had to cross-cut eastward to search for the main portion of the ledge; I believe we are now cutting into it, the ground has been hard, but will get better now I think for driving; 200 sacks raised.

[For remainder of Foreign Mines, see to-day's Journal.]

EARTH-BORING APPARATUS.—The application of a free-falling rope or jumper movement to a novel arrangement of mechanism or apparatus composed of a central rod, an inner tube, or hollow rod, and an outer tube or hollow bar, has been invented by Mr. E. B. BRYNTHORPE, of Stockport, Germany. At the upper part and in connection with the rope, and sliding on the inner tube is a series of strikers bevelled at their lower ends, which are combined together in a circle, and are caused to fall upon the correspondingly inclined or bevelled upper ends or attachments to the upper end of the outer hollow or tubular bar, whilst at the lower end thereof the chisel or chisel-holder is attached by screwing the inner tube or smaller hollow bar is held within the outer tube, and guided by radial ribs and studs, and the bottom end of it has an engaging or disengaging apparatus, consisting of bent levers connected to and worked by the central rod, around which and within the smaller tubular bar is a spiral spring, whilst the rod at its upper end is terminated by a head piece, through which pass the forked suspenders or sling supports of the strikers, and they are connected with and suspended from the rope. Clack valves are introduced for the discharge of muddy water through the rising and falling motion produced in connection with the step-by-step rotary motion by acting on the chisel or boring tool.

COMMUNICATION BETWEEN PASSENGERS AND GUARD.—The object of the invention of Messrs. GOLDSTONE, RADCLIFFE, and GRAY, of Southampton, is to provide in an efficient and inexpensive manner for the transmission of signals by electric currents to either end of a train, or to both ends simultaneously. To attain in this result they fit (say) to the roof or upper part of each carriage of the train a rope containing as a core two insulated copper wires.

JOURNAL BEARINGS.—The invention of Mr. CHARLES A. HUSSEY, of New York, relates to an improvement in journal bearings for railroad carriages, axles or shafting and such like, and consists in so constructing the bearing that currents of water or other liquid or fluid are made to pass through them, and prevent them from becoming heated; also in the combination of conducting tubes for the water with the bearing.

TELEGRAPHING BY THE SUN'S LIGHT.—Mr. H. C. MANOE, of Brooklyn, proposes to arrange a mirror in such manner that flashes of sun light may be reflected with such ease, quickness, precision, and accuracy, both as regards direction and duration, as to afford a ready means of communication between stations however remote (providing the rotundity of the earth or other obstacle does not intervene). The apparatus is specially adapted for use between changing positions, and, therefore, for military purposes in the field. The apparatus permits of the use of the Morse alphabet, which, as the best code of signals extant, is usually employed.

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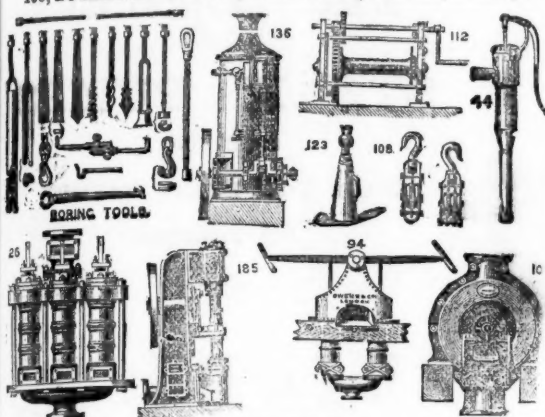
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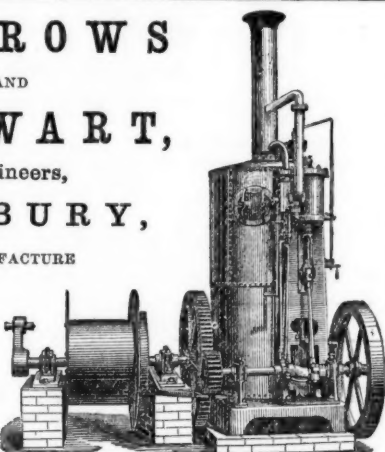
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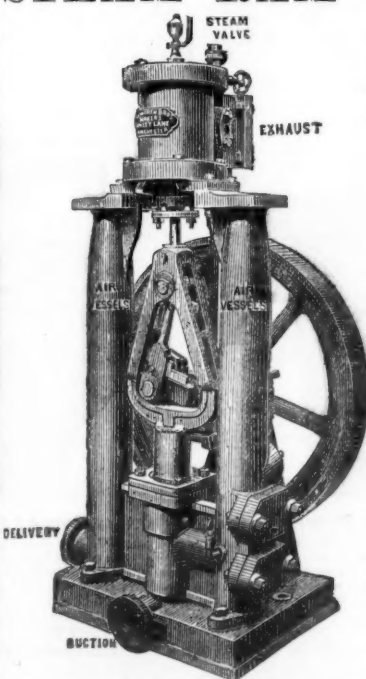
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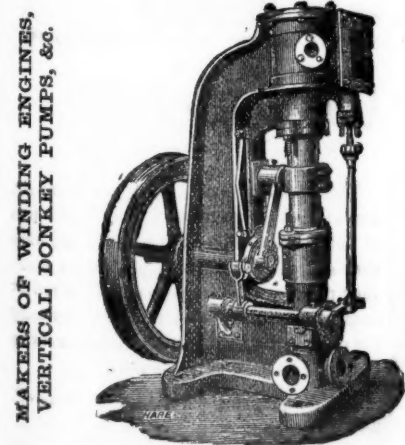
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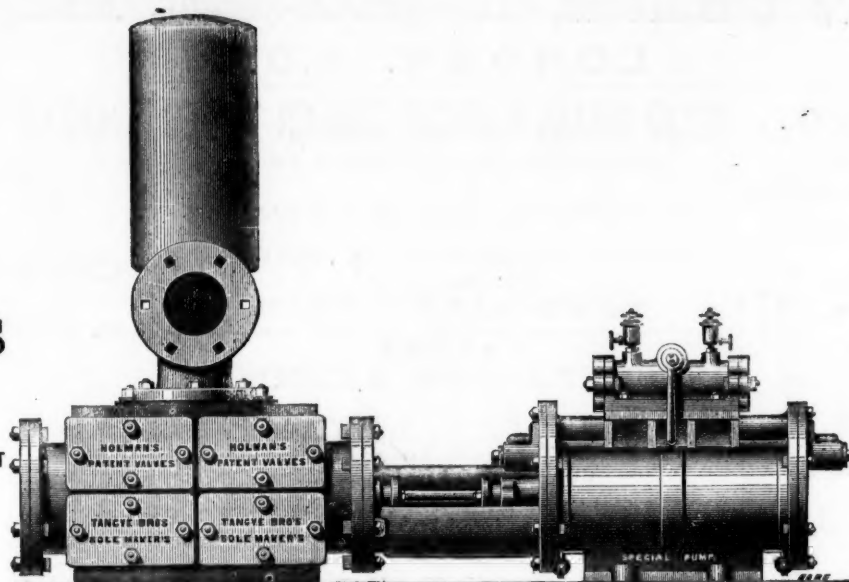
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| Diameter of Steam Cylinder...In. | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 10 | 10 |
| Diameter of Water Cylinder...In. | 1½ | 2 | 3 | 4 | 3 | 4 | 5 | 3 | 4 | 5 | 6 | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 | 8 | 5 | 6 | 7 | 8 | 9 |
| Length of Stroke...In. | 9 | 9 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 18 | 12 | 12 | 12 | 18 | 24 |
| Gallons per hour | 680 | 815 | 1830 | 3250 | 1830 | 3250 | 5070 | 1830 | 3250 | 5070 | 7330 | 1830 | 3250 | 5070 | 7330 | 9750 | 3250 | 5070 | 7330 | 9750 | 13,000 | 5070 | 7330 | 9750 | 13,000 |
| Price | £16 | 18 | 20 | 25 | 22 | 10 | 27 | 10 | 32 | 10 | 25 | 30 | 35 | 40 | 30 | 35 | 40 | 45 | 50 | 40 | 45 | 50 | 55 | 65 | 80 |

CONTINUED.

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|------|--------|--------|--------|------|------|--------|--------|--------|--------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Diameter of Steam Cylinder...In. | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 16 | 16 | 16 | 16 | 16 | 18 | 18 | 18 | 18 |
| Diameter of Water Cylinder...In. | 7 | 8 | 9 | 10 | 6 | 7 | 8 | 9 | 10 | 12 | 7 | 8 | 9 | 10 | 12 | 14 | 8 | 9 | 10 | 12 | 14 | 9 | 10 | 12 | 14 |
| Length of Stroke...In. | 12 | 18 | 24 | 24 | 18 | 18 | 18 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| Gallons per hour | 9750 | 13,000 | 16,519 | 20,000 | 7330 | 9750 | 13,000 | 16,519 | 20,000 | 30,000 | 9750 | 13,000 | 16,519 | 20,000 | 30,000 | 40,000 | 13,000 | 16,519 | 20,000 | 30,000 | 40,000 | 16,519 | 20,000 | 30,000 | 40,000 |
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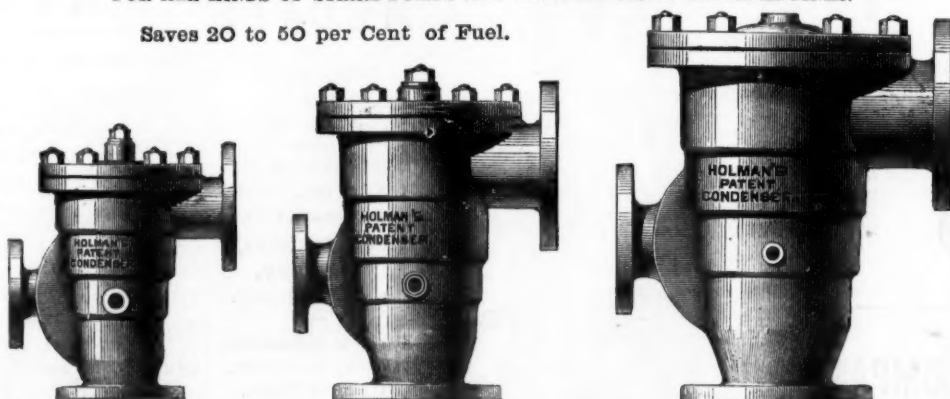
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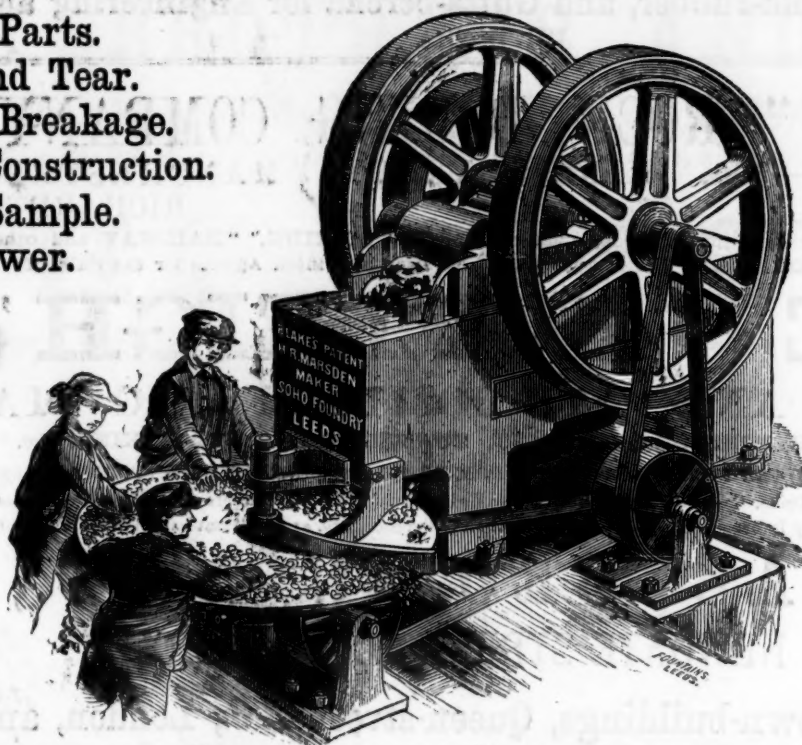
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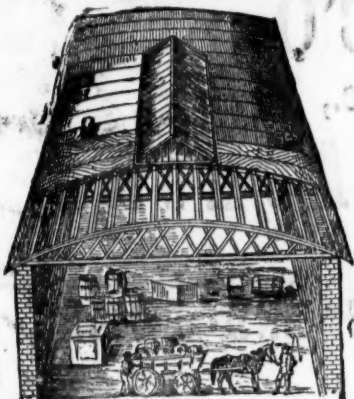
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